# AN EVALUATION OF THE PROGRAM ON ENHANCING RESILIENCE TO NATURAL DISASTERS AND THE EFFECTS OF CLIMATE CHANGE IN BANGLADESH

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# ACKNOWLEDGMENTS

# 1. INTRODUCTION

## 1.1 Background

The United Nations World Food Programme (WFP) has been implementing the Enhancing Resilience (ER) to Natural Disasters and the Effects of Climate Change program in partnership with the Government of Bangladesh since 2008. The overall objective of the program is to enhance the disaster resilience of the local community by not only building rural infrastructures, but also involving ultra poor rural women and men in asset construction activities such as turning embankments into roads and building canals. Participants are recruited for a two-year cycle of (1) labor-based activities, and (2) training sessions focusing on disaster risk reduction, nutrition, and health, among other topics.

With support and major investment from the government, the existing ER program has expanded to include a new "promotional" component, which aims to boost the economic condition of ultra poor laborers and trainees over the long term, and to empower the participants, especially women. Based on its ambitious targets, questions arise, of course: can this be achieved within a short period of time? To what extent is any success sustainable over time?

The International Food Policy Research Institute (IFPRI), under the USAID-funded Bangladesh Policy Research and Strategy Support Program (PRSSP), has systematically assessed the additional contribution—or the "added value"—of the new promotional element of ER (referred to as "ER+"). This report presents the findings of the assessment.

## 1.2 Description of the ER+ Program

The overall objective of the ER+ component is to assist ultra-poor women and their families in disaster-prone areas of Bangladesh in lifting themselves above the lower poverty line toward greater food security. To achieve the objective, a third "promotional" year has been introduced to ER, during which women—either ER laborers/trainees themselves or the wives, daughters, mothers, or sisters of male ER laborers/trainees—receive a substantive cash grant to invest in a productive asset or income-generating activity in combination with relevant business-related training, a one-year monthly cash allowance, and intensive follow-up support. The resulting model therefore combines the pre-existing "protective" elements (employment generation and

community asset development) with "promotional" elements for a more viable pathway out of extreme poverty and toward food security.

The specific objectives of the ER+ component include:

1. Strengthened economic resilience of the women (participants) to cope with and recover from the adversity of disasters over the long-term.

2. Improved dietary diversity and nutritional behavior of the women (participants) and their families.

3. Empowerment of women (participants) to contribute to family decisions and exercise control over income and resources that affect their lives and livelihoods and determine the future of their family members.

In 2013, in partnership with the government, WFP implemented the third year of ER with a pilot group of female laborers/trainees (wives, daughters, mother, or sisters of male ER participants). During the twelve months of the pilot, the women:

- Received an allowance of Taka 500 per month to smooth household consumption while they engaged in training and established their investment, continuing over the critical period of reinvestment;

- Engaged in intensive group-based entrepreneurial skills training to enable them to select an income-generating activity, prepare a business plan, and develop a cost estimate, a production and marketing plan, and a risk management plan for the selected microenterprise;

- Received a one-time cash grant of Taka 12,000 upon submission of a business plan. The women would combine the grant with savings they accrued during the two-year ER period to invest in an asset or income-generating activity.

- Received intensive follow-up support and group training from NGO partners and specially employed local "contact women" for the remainder of the project period. The women participated in training on their asset creation/income-generating activities to ensure that their investment is profitable. The women and their family members also participated in group training sessions to enhance their knowledge, practices, and

empowerment in nutrition behavior change and life skills on family planning, prevention of early marriage, and child education—especially for girls. Group meetings enabled the women in the same community to share their experiences and challenges in order to solve emerging problems.

The program helped establish effective linkages to key services for agriculture, livestock, education, health, and nutrition that would provide a supportive environment for women and their households/families to undertake business activities and contribute to the program's overall sustainability.

## 1.3 Description of the Research

In consultation with IFPRI, WFP designed the research to assess the effectiveness and sustainability of the one-year ER+ intervention toward achieving the stated objectives. The assessment required a three-step data collection process:

1. Establish the baseline socioeconomic and food security status of ER+ women and their households/families before the promotional intervention.

2. Establish the post-intervention socioeconomic and food security status of ER+ women and their households/families at the end of the ER+ intervention year to compare it with the pre-intervention situation.

3. Establish the ex-post sustainability of the improved socioeconomic and food security status of ER+ women and their households/families one year after the end of the ER+ intervention.

The socioeconomic status of ER+ women and their households/families at three different stages was then compared with the socioeconomic status of participants in the standard ER program and non-participants with similar household structures (that is, those with similar demographics with regard to male- or female-headed households) and socioeconomic background.

# 2. METHODOLOGY AND DATA

The study design engaged scientific analytical methodology and data collection procedures to generate useful and valid information on the effects of the ER+ program. This section first presents the methodology of evaluating the impact of the program. It then describes the data collection approach and process.

## 2.1 Designing an Impact Evaluation

In order to design an effective impact evaluation, it is necessary to understand how the evaluation demonstrates impact. The purpose of an impact evaluation is to compare outcomes for program beneficiaries to what those outcomes would have been had they not received the program. The difference between the observed outcomes for beneficiaries and these *counterfactual* outcomes represent the causal impact of the program. The fundamental challenge of an impact evaluation is that it is not possible to observe program beneficiaries in the absence of the program; the counterfactual outcomes for beneficiaries are unknown. All evaluation strategies are designed to find a method for constructing a proxy for these counterfactual outcomes.

A central feature of impact evaluations is the use of longitudinal data (repeat observations of the same individuals or households over time) to use "difference-in-differences" (DID) or "double difference" methods. These methods rely on baseline data collected before the project is implemented and follow-up data collected after it starts to develop a "before/after" comparison. These data are collected from households receiving the program and those that do not.

To see why both "before/after" and "with/without" data are necessary, consider the following hypothetical situation. Suppose an evaluation only collected data from beneficiaries. Suppose that in between the baseline survey and the follow-up, some adverse event occurred (such as a flood) that makes these households worse off. In such circumstances, beneficiaries may be worse off—the benefits of the program being more than offset by the damage inflicted by the flooding. Alternatively, suppose that in some part of the program area, road construction improves market access and thus increases incomes. These effects would show up in the difference over time in the intervention group, in addition to the effects attributable to the

program.  More generally, restricting the evaluation to only "before/after" comparisons makes it impossible to separate program impacts from the influence of other events that affect beneficiary households.

To ensure that our evaluation is not adversely affected by such a possibility, it is necessary to know what these indicators would have looked like had the program not been implemented: we need a second dimension to our evaluation design that includes data on households "with" and "without" the program.  The fundamental problem, of course, is that an individual, household, or geographic area cannot simultaneously undergo and not undergo an intervention.  Therefore, as part of the evaluation, it is necessary to construct a counterfactual measure of what would have happened if the program had not been available, and this is why we also need the "with/without" comparison.

To see how the double difference method works, consider Table 2.1 (Maluccio and Flores 2005).  The columns distinguish between groups with and without the program—that is, households who were receiving program benefits at baseline and those that were not.  We denote groups receiving (with) the program Group $I$ ($I$ for intervention) and those not receiving (without) the program as Group $C$ ($C$ for control group).  The rows distinguish between before and after the program (denoted by subscripts 0 and 1).  Consider one outcome of interest— increased incomes.  Before the program, one would expect the average incomes to be similar for the two groups, so that the difference in incomes $(I_0 - C_0)$ would be close to zero.  Once the program has been implemented, however, one would expect differences between the groups and so $(I_1 - C_1)$ will not be zero.  The double-difference estimate is obtained by subtracting the preexisting differences between the groups, $(I_0 - C_0)$, from the difference after the program has been implemented, $(I_1 - C_1)$.  Under certain conditions (described in our description of evaluation methods, see below), this design will take into account preexisting observable or unobservable differences between the two assigned groups, thus giving average program effects.

**Table 2.1 Calculation of the double-difference estimate of average program effect**

| Survey round | Intervention group (Group $I$) | Control group (Group $C$) | Difference across groups |
|---|---|---|---|
| Follow-up | $I_1$ | $C_1$ | $I_1 - C_1$ |
| Baseline | $I_0$ | $C_0$ | $I_0 - C_0$ |
| Difference across time | $I_1 - I_0$ | $C_1 - C_0$ | Double-difference $(I_1 - C_1) - (I_0 - C_0)$ |

Source: Maluccio and Flores (2005).

Maluccio and Flores (2005) also show how the double-difference method can be illustrated graphically, as in Figure 2.1. For an arbitrary indicator measured over time, it is assumed (for the graph) that both the intervention and control groups start at the same level (on the vertical axis). No change in the indicator over time would lead to the outcome depicted by point $I_0 = C_0$, Relaxing the assumption that the two groups start at identical points slightly complicates the graphical exposition, but the underlying logic remains the same. If only the intervention group were being followed, one would then naively calculate the effect of the program as $I_1 - I_0$. However, as the control group makes clear, there was a trend over time that led to an improvement (in this example) of $C_1 - C_0$. Estimates ignoring this would overstate the effect of the program. Instead, the correct estimate of the program effect is $I_1 - C_1$; this is the double-difference estimate, since $I_0 = C_0$. In the case where the trend line for the control group was declining, ignoring that effect would tend to understate the program effect.

**Figure 2.1 Illustration of the double-difference estimate of average program effect**
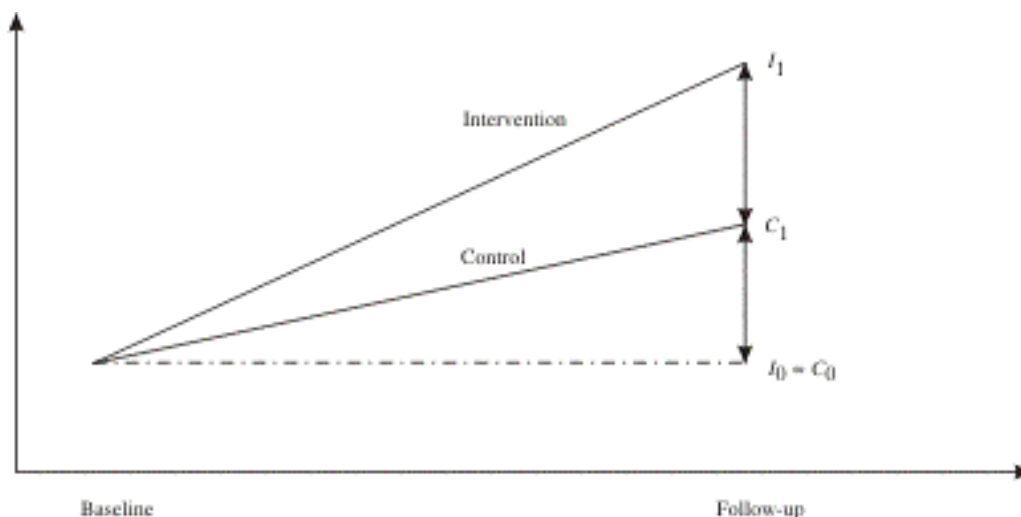
### 2.1.1 Method Used to Estimate the Impact of the ER+ Program

To estimate impacts of the ER+ program on outcomes, we apply panel data econometric methods, beginning with regression using fixed effects (FE). When the panel has only two time periods, this estimator is equivalent to the difference-in-difference (DID) estimator. FE is a traditional regression method for impact assessment. With panel data, this method can be used to estimate the impact, based on the assumption that unobserved differences between participants and non-participants are invariant in time.

Following Wooldridge (2010), assuming a linear relation between the outcome variable, the unobserved heterogeneity and the covariates or characteristics of the households, we can write:

$$y_{it} = \beta_0 + \tau w_{it} + \beta x_{it} + c_i + u_{it} \qquad (2.1)$$

where $y$ indicates the outcome variable, $w$ is a binary variable that indicates participation in the project, $x$ is a matrix of time varying covariates, $c$ is the unobserved heterogeneity, and $u$ is the error term. By taking the difference, we removed time invariant unobservable characteristics $c_i$. Then obtaining the first difference between periods $t$ and $t$-1, the unobservable characteristics, assumed invariant in time, are eliminated, correcting for this source of bias on the program impact estimation. The difference-in-difference estimation equation could be written as (Wooldridge 2010):

$$\Delta y_{it} = \alpha_0 + \tau w_{it} + \beta \Delta x_{it} + \Delta u_{it} \qquad (2.2)$$

where $\Delta y_{it} = y_{it} - y_{it-1}$, $\Delta x_{it} = x_{it} - x_{it-1}$ and $\Delta u_{it} = u_{it} - u_{it-1}$. With two time periods, it does not matter if we difference $w$, since participation in the program will be 0 for all the observations in the first time period, and will take values 0 and 1 depending on whether it is a comparison or a treatment observation. We obtain the program impact by the regression of the change in the outcome variable $y$, the project participation variable $w$, and the change in a set of time varying covariates $x$. The first difference equation will be consistent if $E(\Delta x_{it}' \Delta u_{it}) = 0$. The parameter of interest is $\tau$.

The difference-in-differences estimator assumes parallel trends for both treatment and control in the absence of the treatment. Therefore, correcting for differences between the two groups requires controlling for covariates related to household characteristics (Abadie 2005). To take care of possible differences of covariates between treatment and control, we include some time varying household characteristics, and use DID for estimating program impacts.

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**2.2 Data**

The required data to evaluate the ER+ program came from two rounds of household surveys. For implementing the household surveys, WFP contracted the Data Analysis and Technical Assistance (DATA) Limited, a Bangladeshi consulting firm with expertise in conducting complex surveys and data analysis. DATA's capacity to conduct surveys to collect high-quality data was largely built by IFPRI over the past two decades.

DATA conducted the baseline survey in March 2013, and the endline survey in March 2014. The surveys included ER+ program participants and control households. The surveys were implemented in the following locations:

**North:** Chilmari, Kurigram Sadar, Belkuchi, Saghata, Fulbari, Fulchari, Kamarkhondh, and Ulipur Upazilas.

**South:** Kalapara, Shyamnagar, Dacope, Assasuni, Golachipa, and Sharonkhola Upazilas.

The total baseline sample was estimated to be 2,400 households, in three groups:

1. **Treatment group:** ER+ women and their households/families – a sample of 400 households from the northern locations and 400 households from the southern locations.

2. **Control 1**: ER women laborers/trainees and their households from those upazilas who would not continue for the third year of ER+ (that is, those who would not receive a cash grant, business development training, and will complete the ER program at two years) – a sample of 400 from the northern locations and 400 from the south.

3. **Control 2:** Ultra poor women and their households/families (with comparable households/family structure) who did not participate in ER, or in any other similar programs – a sample of 400 from the northern locations and 400 from the south.

*2.2.1 Sampling*

The ER+ baseline survey used a purposive sampling method for selecting households from the three sample groups living in the selected northern and southern upazilas. The samples were drawn in two ways: (1) selected ER+ and Control 1 sample from a list of ER program

participants in the 14 selected upazilas, and (2) selected control 2 sample from a rapid enumeration of non-ER participants in the same locations.

Out of the 14 upazilas in our study, seven were selected as participants of the ER+ program, and seven were selected as Control 1, as ER participants in those upazilas were not going to be part of the ER+ program. A three-stage stratified sampling procedure was followed: (1) selection of upazilas, (2) selection of primary sampling units (PSU) within each upazila, and (3) selection of households within each PSU.

The sampling process and survey administration include the following steps:

- Identify the upazilas for ER+ and control 1 subsamples.
- List all mouzas in the selected upazilas using the 2011 National Population Census data.
- Order mouzas by the total number of ER participants within the mouza, from the total number of ER participants in the upazila.
- Select the mouzas with 80 percent of total number of participants within the upazila.
- Randomly select 40 mouzas (PSUs) for each subsample group (20 in the north, 20 in the south) with probability proportional to size (PPS) sampling using the total number of ER participants as the size.
- Randomly select 20 ER participant households within each mouza. Thus, 800 ER+ and 800 Control 1 households were selected.
- Selected 800 ultra-poor households for Control 2 sample through a rapid enumeration of non-ER participants in the same locations.
- Conduct interviews of selected farm households.

The baseline survey sample included 2,397 households (800 ER+, 797 ER households as Control 1, and 800 non-ER households as Control 2). In the endline survey, the survey team was able to re-survey a total of 2,337 households (786 ER+, 781 Control 1, and 770 Control 2). Therefore, there was an attrition of 2.5 percent of the baseline sample households, which is small and acceptable for the analysis of the survey data.

### 2.2.2 Survey Questionnaire

The IFPRI-PRSSP team prepared draft questionnaires for the baseline and the endline surveys, which were peer-reviewed by WFP. IFPRI researchers revised the questionnaire to incorporate comments and feedback received from WFP. The questionnaires were finalized after enumerators' training and pre-testing for both baseline and endline surveys.

The ER+ survey questionnaires include modules that together provide an integrated data platform to evaluate the ER+ program. The modules of the questionnaires are listed below:

<u>Household roster</u>

    a.  Household composition (program participation, relation to household, gender, age, marital status, occupation, literacy, level of education, chronic illness/disability)

    b.  Education (school/madrasa attainment, reason for not attending school/madrasa, year and class when first attending school/madrasa, type of school/madrasa, distance, school/madrasa enrollment in 2013 and 2014, school/madrasa drop out and reason)

<u>Occupation</u> (employment status, duration of unemployed, activities for last seven days, work hour, nature of activity, daily wage/salary, income in kind)

<u>Current household assets</u> (ownership, type of asset, how acquired, current value, amount and price if sold after 1$^{st}$ round)

<u>Savings</u> (where saved, planned use of savings, amount saved)

<u>Loans</u>

    a.  Loan taken (source of loan for each borrower, use of loan, outstanding amount of loan, interest rate)

    b.  Loan given (amount given, interest rate, outstanding amount)

<u>Land and pond/water bodies owned or under operation</u> (area under homestead land, cultivable land, other land)

<u>Agricultural production</u>

    a.  Homestead food production (crops grown, total production, quantity consumed and sold, receipt from sale, institutional assistance)

    b.  Agricultural production on own land and mortgaged/rented/leased-in land, area planted, area irrigated, total production

<u>Non-agricultural enterprises</u> (type of business, profit sharing, selling points, customer, sources of finance, problems faced)

<u>Housing</u> (monthly rent, building materials of the house, number and use of rooms, floor area, access to electricity and mobile phone, sources of cooking fuel)

<u>Sanitation and water</u> (type of latrine, access to safe water, source of drinking water, garbage disposal, hand washing practice)

<u>Access to facilities</u> (distance and time taken to commute by mode of transportation)

<u>Negative shocks</u> (frequency, condition after last shock, value of total loss, coping strategy)

<u>Transfers received</u>

    a. Assistance received from any social safety net programs

    **b.** Private transfers (amount received as remittance from friends and/or relatives from abroad and from within Bangladesh)

<u>Food consumption</u>

    a. Food consumption in the last seven days (quantity of food consumed from purchased food, price of purchased food, quantity consumed from own production, quantity of food received from other sources)

    b. Consumption and consumption habits (frequency of food scarcity in previous four weeks, number of days of selected food items eaten in past seven days and sources of these food items)

<u>Nonfood expenditure</u>

    a. Nonfood expenditures monthly recall (expenditure on fuel, cosmetics, washing and cleaning, transport and traveling, and other miscellaneous expenses)

    b. Nonfood expenditure annual recall (expenditure on clothing for adults and children, housing expenses, medical expense for male and female, educational expense for male and female, remittances and gifts given, recreational expense, tax and fines, furniture, personal articles, household durables and insurance expenditure)

<u>Budget behavior</u>

    a. Seasonality of income (particular month or months of the year when the household earns more or less than usual)

    b. Use of cash received (who decides what to do with the cash and actual purpose of use of the cash received from own labor, spouse's labor, government benefits and gifts from family or friends)

c. Women's behavior in an imaginary situation where she has to allocate cash on non-staple food, non-food goods, etc. or food on consumption, selling food for buying good or repaying debts)

Illness (illness in last 30 days, symptoms of illness, medical expenses such as consultation fee, cost of medicine, etc., maternity cost such as clinic and midwife, reason for not receiving medical treatment)

Women's status

a. Work earnings and expenses (place of work of women, reason for women not working, decision of women's work and earning, women's loan from NGOs, decision of allocation of earning for food, health care, education, etc., women's control over money, women's decision on children's education and marriage)

b. Mobility (decision on women's mobility, preconditions for women's mobility)

c. Reproductive decision (women's control over reproductive decisions, such as use of birth control method)

d. Domestic violence (women threatened with divorce by husband, women abused either verbally or physically, women's action after getting threatened or abused)

ER+ program participation (Only for ER+ participant households)

Selection process, amount of money entitled, amount received, mode of transaction, use of cash received, training received and its usefulness.

### 2.2.3 Training and Survey Administration

DATA provided experienced survey enumerators and supervisors to administer the survey. IFPRI researchers and DATA experts trained the enumerators and supervisors to conduct the survey. The training of the survey team consisted of a formal classroom component, as well as closely monitored fieldwork for pre-testing the questionnaire. In the formal training, IFPRI researchers briefed the enumerators and supervisors on the objectives and methods of the survey, the sampling design, and the responsibilities of the enumerators. The enumerators were trained on how to carry out the interviews, including line-by-line explanation and interpretation of the questionnaires, the flow and skip-patterns, definitions, and explanations of how to handle unusual cases and when to contact the supervisors for assistance.

Field supervisors received additional training related to their supervisory role. In particular, they were trained on the quality control process, cross-checking, editing and coding of the

questions, security and confidentiality issues, and the delivery of the completed questionnaires to the DATA office in Dhaka for simultaneous data entry.

The enumerators conducted the interviews one-by-one and face-to-face with the respondents assigned to them. The enumerators were supervised by the field supervisors who accompanied them to the village. Each field supervisor was responsible for his defined area. All field staff reported their activities to their superiors using a standard progress report form. Completed questionnaires were delivered to the DATA central office in Dhaka on a regular basis for further quality control and validation during data entry.

### 2.2.4 Data Quality Control

DATA took much care to ensure the quality of household survey data. In the field, survey supervisors routinely oversaw interviews conducted by enumerators, and verified all questionnaires completed by enumerators on a daily basis. If inconsistencies in responses were detected in completed questionnaires, then the supervisors visited the related respondents to find out the reasons and corrected the responses as needed. In addition, the supervisors made random checks of about 10 percent of the completed questionnaires by revisiting the sample households.

### 2.2.5 Data Entry and Cleaning

The data entry was carried out at the DATA office in Dhaka simultaneously during data collection, with a about a week lag. It is important to carry out the data entry as soon as possible after data collection in case there are errors that can only be addressed by returning to the village where it occurred.

# 3. PROFILE OF SURVEY HOUSEHOLDS

Using household survey data collected from the ER+ baseline and endline surveys, this section presents the profile of households in our sample's three groups. The objective is to analyze the differences between ER+ and ER participants, especially in a set of key outcome indicators for the evaluation of the ER+ program. In some cases, results are compared with the characteristics of rural households in Bangladesh for context and comparison with the profile of a typical rural household in the country.[1]

The following sub-sections show the analysis of WFP's key indicators, the changes experienced from baseline to endline for those indicators, and the analysis of other important indicators for different groups in our study (ER+, ER, and control groups).

## 3.1 Poverty

Table 3.1 shows the results of the analysis of poverty, this is done by evaluating the change of the proportion of ultra poor households that have moved above the poverty line threshold across groups. The results have shown that there are significant differences of poverty reduction between ER and ER+ households. There are 4.5 percent more ER+ households that have surpassed the lower poverty line from baseline to endline. ER+ households have then caught up with ER households on poverty, as ER households have not experienced improvement, and poverty levels have somewhat remained stagnant.

**Table 3.1 Poverty**

|  | ER+ | | ER | | Control | |
|---|---|---|---|---|---|---|
|  | Baseline | Endline | Baseline | Endline | Baseline | Endline |
| Observations | 742 | 785 | 774 | 781 | 777 | 769 |
| **WFP Key Indicator** | | | | | | |
| Proportion of ultra poor households that surpassed the lower poverty line (%) | 34.3b | 38.8ab | 41.3a | 40.2b | 33.0b | 34.2a |
| Change | | 5a | | -1b | | 1b |

**Note:** Letters "a," "b," and "c" imply statistical difference at 10 percent significance level using the Tukey-Kramer test.

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[1] For comparison, we use the results reported in a recent study by Ahmed et al. (2013) based on data from the Bangladesh Integrated Household Survey (BIHS), which is a nationally representative rural household survey conducted by IFPRI in 2011/2012.

**3.2 Food consumption**

The analysis of food consumption was done in three ways: first, using the WFP's Food Consumption Score (FCS); second, analyzing the consumption of major food groups between ER+ and control groups; and third, analyzing food and non-food per capita expenditures.

FCS is an indicator combining information on the diversity of food consumed with respect to several different food groups, the frequency with which each of these food groups is consumed, and a weight on each food group reflecting its nutritional importance. Thus, the FCS captures some dimensions of diet diversity, consumption frequency of specific foods, and nutritional value (Ahmed et al. 2016). Table 3.2 shows the weights by food group.

**Table 3.2 Weights on food groups in the World Food Programme's Food Consumption Score**

| Group | Food items | Food group | Weight |
|-------|-----------|-----------|--------|
| 1 | Rice and other cereals | Staples | 2 |
| 2 | Beans, lentils, peas, and nuts | Pulses | 3 |
| 3 | Vegetables and leaves | Vegetables | 1 |
| 4 | Fruits | Fruits | 1 |
| 5 | Beef, goat, poultry, eggs, and fish | Meat, eggs, and fish | 4 |
| 6 | Milk, yogurt, and other dairies | Milk | 4 |
| 7 | Sugar, sugar products, and honey | Sugar | 0.5 |
| 8 | Oils, fats, and butter | Oil | 0.5 |

Source: Ahmed et al. (2016).

We analyzed the level of the score, and share of households with increased FCS score, as well as the distributions of households with poor, borderline, and acceptable levels of consumption. The results are reported in Table 3.3.

First, ER+ households have shown greater improvements on food consumption compared to the control groups. The average FCS score for ER+ households have increased 15.4 percent from baseline to endline, and around 81 percent of ER+ households have experienced improvements on their FCS score as well from baseline to endline. Furthermore, ER+ group has experienced the sharpest decrease of households with borderline poor and borderline consumption, while then experienced the greatest increase of households with acceptable levels of consumption (44 percent increase).

Second, the analysis of the proportion of households consuming major food groups show that consumption of rice, vegetables, and potatoes and other roots/tubers is very similar across sample groups and has not changed much from baseline to endline. ER+ households exhibit slightly higher improvements in the consumption of fish (fresh and dry), and oil and fats.

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## Table 3.3 Food consumption and Income

| | ER+ | | ER | | Control | |
|---|---|---|---|---|---|---|
| | Baseline | Endline | Baseline | Endline | Baseline | Endline |
| Observations | 742 | 785 | 774 | 781 | 777 | 769 |
| **WFP Key Indicators** | | | | | | |
| *Food Consumption:* | | | | | | |
| Share of households (HH) with acceptable level of food consumption based on FCS | 44.8b | 60.2b | 47.0c | 59.4b | 42.1a | 56.9a |
| Share of HH with poor consumption | 10.1b | 0.8 | 5.4a | 0.6 | 9.9b | 0.7 |
| Share of HH with borderline consumption | 41.3a | 6.6a | 39.7a | 8.7ab | 47.7b | 11.4b |
| Share of HH with acceptable consumption | 48.6b | 92.6b | 54.9c | 90.7ab | 42.5a | 87.9a |
| | | | | | | |
| Proportion of households consuming major food groups | | | | | | |
| …. Rice | 7 | 7 | 7 | 7 | 7 | 7 |
| …. Potatoes and other roots/tubers | 5.3a | 5.5a | 5.6b | 6.0b | 5.5ab | 5.8b |
| …. Vegetables | 6.7b | 6.2a | 6.9a | 6.5b | 6.9a | 6.4b |
| …. Fish (fresh and dry) | 2.2c | 2.5b | 1.9b | 2.1a | 1.7a | 2.1a |
| …. Oil//fats (ghee, butter, veg oil) | 6.8b | 7 | 6.9ab | 6.9 | 6.9a | 7 |
| | | | | | | |
| *Income:* | | | | | | |
| Share of HH with two or more sources of income | 83b | 92c | 84b | 85b | 67a | 70a |
| Per capita monthly expenditures (taka) | | | | | | |
| …Total | 1,199a | 1,227b | 1,263b | 1,229b | 1,211a | 1,152a |
| …Food | 1,008 | 1,020b | 1,066 | 997ab | 1,058 | 971a |
| …Nonfood | 191b | 207b | 197b | 232c | 153a | 182a |
| | | | | | | |
| **WFP Key Indicators (Changes)** | | | | | | |
| *Food Consumption:* | | | | | | |
| Share of HH with acceptable level of food consumption based on FCS | 15 | | 12 | | 15 | |
| Share of HH with increased FCS | 80.8ab | | 77.2a | | 83.9b | |
| Share of HH with poor consumption | -9 | | -5 | | -9 | |
| Share of HH with borderline consumption | -35 | | -31 | | -36 | |
| Share of HH with acceptable consumption | 44 | | 36 | | 45 | |
| | | | | | | |
| Proportion of households consuming major food groups | | | | | | |
| …. Rice | 0 | | 0 | | 0 | |
| …. Potatoes and other roots/tubers | 0.1 | | 0.3 | | 0.2 | |
| …. Vegetables | -0.5 | | -0.4 | | -0.5 | |
| …. Fish (fresh and dry) | 0.3ab | | 0.2a | | 0.5b | |
| …. Oil//fats (ghee, butter, veg oil) | 0.2b | | 0.1a | | 0.1a | |
| | | | | | | |
| *Income:* | | | | | | |
| Share of HH with two or more sources of income | 8b | | 1a | | 2a | |
| Per capita monthly expenditures (taka) | | | | | | |
| …Total | 28a | | -39b | | -56c | |
| …Food | 12a | | -69b | | -87b | |
| …Nonfood | 16 | | 35 | | 29 | |

Note: Letters "a," "b," and "c" imply statistical difference at 10 percent significance level using the Tukey-Kramer test.

Third, the analysis of food and nonfood expenditures shows that total per capita monthly expenditure was similar for all groups at baseline, yet ER+ households where the only group that experienced a slight increase in both food and nonfood expenditures, while ER and Control groups experienced a decline in food expenditures at endline. This is an important result as it is one of the program's objectives to improve food consumption.

**3.3 Income**

Table 3.3 above also shows the analysis of income. The analysis of income was done by looking at two indicators: (1) the total per capita monthly expenditure, and (2) the proportion of households with two or more sources of income. The analysis of total per capita monthly expenditure shows that ER+ households have been the only group that has experienced increased income from baseline to endline. ER and control group samples have experienced a slight decrease in income. This supports the results found on the analysis of food consumption, which demonstrates that higher income will increase food consumption among poor households.

ER+ households are also diversifying their income sources. From baseline to endline, 8 percent more ER+ households have two or more sources of income, which is a large improvement compared to ER households (1 percent increase), and the control group (2 percent increase).

**3.4 Assets**

Table 3.4 shows the analysis of household assets. The analysis of proportion of households with increased asset score was done by analyzing the improvement of total value of owned assets, where individual assets are valued at median buying prices. We disaggregated assets into three categories: (1) durables, (2) nonfarm productive, and (3) farm productive assets for our analysis. The results are as follows:

First, while the value of different types of assets (durables, nonfarm, and farm assets) were very similar between ER+ and ER households at baseline, ER+ households experienced a larger increase of assets, especially farm assets. ER+ households have 83 percent more farm assets from baseline to endline, compared to a 5 percent increase among ER households. The analysis of nonfarm assets follows a similar path as ER+ households have experienced a 59 percent increase of nonfarm assets from baseline to endline, compared to a 38 percent increase among ER households. Interestingly, durables have not changed much from baseline to endline for both ER+ and ER households, ER+ have experienced an 18 percent increase, while ER households have experienced an 11 percent increase.

**Table 3.4 Asset ownership**

| | ER+ | | ER | | Control | |
|---|---|---|---|---|---|---|
| | Baseline | Endline | Baseline | Endline | Baseline | Endline |
| Observations | 742 | 785 | 774 | 781 | 777 | 769 |
| **WFP Key Indicators** | | | | | | |
| *Assets:* | | | | | | |
| …Durables | 1,766b | 2,088b | 1,912c | 2,129b | 1,440a | 1,619a |
| …Nonfarm | 3,523b | 5,617b | 3,550b | 4,891b | 1,596a | 2,570a |
| …Farm | 10,445b | 19,089c | 9,950b | 10,429b | 4,417a | 5,816a |
| Total asset | 15,733b | 26,792c | 15,411b | 17,449b | 7,461a | 10,018a |
| **WFP Key Indicators (Changes)** | | | | | | |
| *Assets:* | | | | | | |
| …Durables | 321b | | 217a | | 179a | |
| …Nonfarm | 2,094b | | 1,340a | | 974a | |
| …Farm | 8,642b | | 479a | | 1,399a | |
| Total asset | 11,058b | | 2,037a | | 2,552a | |
| **Other Indicators** | | | | | | |
| Selected asset ownership (%) | | | | | | |
| …Electric fan | 2 | 3 | 3 | 5 | 4 | 6 |
| …Television | 3 | 5 | 4 | 7 | 1 | 2 |
| …Mobile phone | 52 | 68 | 62 | 76 | 46 | 59 |
| …Bicycle | 15 | 18 | 11 | 17 | 10 | 13 |
| …Rickshaw-van | 0 | 0 | 1 | 2 | 1 | 2 |
| …Solar panel | 13 | 24 | 14 | 21 | 4 | 9 |

**Note**: Letters "a," "b," and "c" imply statistical difference at 10 percent significance level using the Tukey-Kramer test.

Second, ER+ households have heavily invested in both farm and nonfarm productive assets from baseline to endline, which are needed to engage in more income generating activities that will diversify their income sources, mitigate risk, and help ER+ households move out of poverty. These trends are consistent with the findings in the employment sector analysis, which show that farm self-employment has increased substantially between baseline and endline. Overall, ER+ households have experienced the greatest increased in total asset ownership from baseline to endline. The improvement of ER+ households (Taka 11,058) is four to five times higher than ER and control groups.

Third, it is important to note that all households within our sample are among the poorest households (asset-wise) in rural Bangladesh. The analysis of asset ownership has shown that households within our sample have lower shares of asset ownership compared with households within the lowest income quintile in rural Bangladesh. The share of asset ownership is remarkably lower when analyzing assets such as electric fans, televisions, mobile phones, bicycles, and rickshaw-vans. However, there is an exception in these results: the share of households owning solar panels among ER and ER+ households is higher than the average rural household in Bangladesh (3.4 percent). Ownership of these assets increases from baseline

to endline, with the share of households owning solar panels almost doubling. However, the share of ER+ households owning solar panels increased more than ER households (11 percent), while ER households increased 7 percent from baseline (Table 3.4).

**3.5 Coping strategy**

The WFP's coping strategy index (CSI) captures the frequency and severity of the behaviors that households engage in when encountered with food shortages (Table 3.5). The available data allow us to calculate an adapted version of the index, which takes into account the worst three negative shocks experienced by a household in the past five years, and up to three coping behaviors the household adopted in response to those shocks. Larger numbers for the index indicate households resorting to more severe coping strategies.

**Table 3.5 Coping strategy (CSI Index).**

|  | ER+ | | ER | | Control | |
|---|---|---|---|---|---|---|
|  | Baseline | Endline | Baseline | Endline | Baseline | Endline |
| Observations | 742 | 785 | 774 | 781 | 777 | 769 |
| **WFP Key Indicator** | | | | | | |
| Proportion of households with improved coping strategy CSI index | 3.67 | 3.00a | 3.68 | 3.22a | 3.6 | 3.62b |
| Change | -.7b | | -.4b | | .02a | |
| Share of households with lower CSI (%) | 67.7 | | 65.9 | | 59.3 | |

**Note**: Letters "a," "b," and "c" imply statistical difference at 10 percent significance level using the Tukey-Kramer test.

Using this adapted CSI, we find that ER+ households have the largest improvement on reducing the CSI, as the average score has reduced by 0.7 percentage points for the ER+ group and around 68 percent of the ER+ households experienced improvements reducing the CSI. ER households have also improved by reducing the average CSI score and increasing the share of households with lower CSI score, but their improvement is lower than ER+ households. Therefore, participation in the ER+ program indicates slightly improved ability to cope with negative shocks.

**3.6 Women's participation in key family decisions**

Table 3.6 shows the state of women's status in the household by analyzing data from households where the main female respondent is married. Responses on decision to work, control over income, children's education, daughter's marriage, and family planning indicate that women's status in the household has improved for ER+ households, but the improvement is comparable to the improvement shown by ER and control households.

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**Table 3.6 Women's participation in key family decisions**

| | ER+ | | ER | | Control | |
|---|---|---|---|---|---|---|
| | Baseline | Endline | Baseline | Endline | Baseline | Endline |
| Observations | 742 | 785 | 774 | 781 | 777 | 769 |
| **WFP Key Indicators** | | | | | | |
| Proportion of women who participate in key family decision making | | | | | | |
| Joining workforce (self) | 17.4a | 20.5a | 16.0a | 21.2a | 23.2b | 29.5b |
| Husband decided | 3.4 | 3.1b | 3.6 | 1.4a | 1.6 | 1.8ab |
| Joint decision with husband | 78.7 | 75.9b | 80.4 | 77.3b | 75.1 | 68.7a |
| Someone else's decision | 0.2 | 0.5 | 0 | 0.2 | 0 | 0 |
| | | | | | | |
| Spending own income (self) | 14.2ab | 17.0ab | 11.7a | 14.0a | 18.5b | 21.4b |
| Husband decided | 3.9b | 4.1 | 2.9ab | 2.4 | 0.9a | 1.6 |
| Joint decision with husband | 81.7 | 78.2a | 85.1 | 83.4b | 80.3 | 76.8a |
| Someone else's decision | 0.2 | 0.6 | 0.3 | 0.2 | 0.2 | 0.2 |
| | | | | | | |
| Child's education (self) | 11.1b | 9.9b | 7.5a | 5.3a | 8.4ab | 9.5b |
| Husband decided | 3.9 | 2.9 | 2.2 | 2.6 | 2.3 | 2.3 |
| Joint decision with husband | 74.4a | 79.0a | 80.9b | 84.5b | 78.1ab | 79.2a |
| Someone else's decision | 0.5 | 0.3 | 0.3 | 0 | 0.4 | 0.6 |
| Not applicable | 10.2 | 7.9 | 9.1 | 7.6 | 10.8 | 8.5 |
| | | | | | | |
| Daughter's marriage (self) | 3.1 | 4.6 | 3.1 | 3.1 | 3.2 | 4 |
| Husband decided | 2 | 2.7 | 2.2 | 1.7 | 1.1 | 2.5 |
| Joint decision with husband | 74.4ab | 73.6a | 76.9b | 79.4b | 71.3a | 74.2ab |
| Someone else's decision | 0.2 | 0.3 | 0.2 | 0 | 0.2 | 0.2 |
| Not applicable | 20.3ab | 18.8 | 17.7a | 15.8 | 24.1b | 19.1 |
| | | | | | | |
| Family planning (self) | 17.9b | 14.3 | 11.5a | 12 | 11.2a | 10.7 |
| Husband decided | 4.8 | 3.7b | 3.3 | 0.9a | 4.4 | 2.1ab |
| Joint decision with husband | 77.1a | 81.8a | 85.2b | 86.9b | 84.2b | 87.0b |
| Someone else's decision | 0.2 | 0.2 | 0 | 0.2 | 0.2 | 0.2 |
| **WFP Key Indicators (Changes)** | | | | | | |
| Joining workforce (self) | | 3.4 | | 5.7 | | 6.3 |
| Husband decided | | -0.2 | | -2.3 | | 0.2 |
| Joint decision with husband | | -3.4 | | -3.6 | | -6.6 |
| Someone else's decision | | 0.1 | | 0.1 | | 0 |
| | | | | | | |
| Spending own income (self) | | 3.8 | | 3.6 | | 0.7 |
| Husband decided | | -0.1 | | -0.5 | | 0.7 |
| Joint decision with husband | | -4.2 | | -2.9 | | -5.2 |
| Someone else's decision | | 0.5 | | -0.1 | | 0 |
| | | | | | | |
| Child's education (self) | | 0.3 | | -1.8 | | 0.5 |
| Husband decided | | -1 | | 0.4 | | 0 |
| Joint decision with husband | | 3.5 | | 3.1 | | 1.5 |
| Someone else's decision | | -0.1 | | -0.3 | | 0.1 |
| Not applicable | | -2.6 | | -1.5 | | -2.2 |
| | | | | | | |
| Daughter's marriage (self) | | 2.7 | | 0.6 | | 0.1 |
| Husband decided | | 0.6 | | -0.4 | | 1.2 |
| Joint decision with husband | | -1.5 | | 2.1 | | 3.1 |
| Someone else's decision | | 0.5 | | -0.1 | | -0.1 |
| Not applicable | | -2 | | -2.1 | | -4.4 |
| | | | | | | |
| Family planning (self) | | -4.1 | | 0.6 | | 0.5 |
| Husband decided | | -0.5 | | -1.7 | | -1.9 |
| Joint decision with husband | | 4.7 | | 1 | | 1.3 |
| Someone else's decision | | 0 | | 0 | | 0 |

Note: Letters "a," "b," and "c" imply statistical difference at 10 percent significance level using the Tukey-Kramer test.

## 3.7 Household Characteristics

Table 3.7 shows the results of analysis of other household characteristics, including household size and dependency ratio. The results show that there is no difference between ER+ and ER households. Overall ER households (ER and ER+) are considerably younger and probably poorer than the average rural household in Bangladesh. We infer this by looking at findings such as (1) the average household size of this sample is roughly 20 percent smaller compared to average rural household size at the national level, as shown by data from IFPRI's 2011/2012 BIHS (Ahmed et al. 2013), and (2) the average age of the sample households is 30 years. Collectively, these suggests that our sample is composed of young households, which is to be expected as usually these are the poorest rural households, as they have not yet accumulated wealth and assets that are typical of an older household.

**Table 3.7 Household characteristics**

|  | ER+ | | ER | | Control | |
|---|---|---|---|---|---|---|
|  | Baseline | Endline | Baseline | Endline | Baseline | Endline |
| Observations | 800 | 786 | 797 | 781 | 800 | 770 |
|  |  |  |  |  |  |  |
| Household size (persons) | 4.2b | 4.4b | 4.2a | 4.4b | 3.6a | 3.8a |
| Dependency ratio | 0.8 | 1.0b | 0.8 | 0.9a | 0.8 | 0.9a |
| Literacy (percent) | 41b | 40ab | 43b | 42b | 36a | 39a |
| Female headed HHs (percent) | 23a | 27a | 21a | 23a | 42b | 42b |

**Note:** Letters "a," "b," and "c" imply statistical difference at 10 percent significance level using the Tukey-Kramer test.

Table 3.7 also demonstrates that there is no difference in literacy between ER+ and ER households, and both groups tend to be less literate than a typical rural household in Bangladesh.[2] Interestingly, ER+ and ER households are less literate compared to the households belonging to the lowest income quintile of rural households at the national level, as those have a 50.5 percent literacy rate. This result reinforces the previous finding that ER-targeted households are among the poorest rural households in Bangladesh.

## 3.8 Employment

Table 3.8 lists the results of employment status of the sample households. Interestingly, it shows that ER+ households have had greater increase in participation in rural nonfarm wage employment compared to ER and control samples. 18 percent more ER+ households earn

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[2] A person who can read and write a sentence in Bangla is considered to be literate.

income from nonfarm wage employment compared to the baseline values, indicating that ER+ households are diversifying the household's income sources.

We also observe a substantial redistribution in wages from farm and nonfarm sources between baseline and endline (Table 3.8). Farm wages declined while nonfarm wages increased for the entire sample between baseline and endline. Interestingly, ER+ households experienced higher increase in nonfarm wages compared to ER and control subsamples. This is a positive effect of the ER+ program, as it might point that ER+ households are better remunerated, which may imply better skilled jobs. However, it is important to note that these wages are below the average farm and nonfarm wages received by rural households in Bangladesh. Therefore, we can assume that the ER program is not distorting wages in the rural labor markets, which should be the objective of this type of program.

**Table 3.8 Analysis of employment**

| | ER+ | | ER | | Control | |
|---|---|---|---|---|---|---|
| | Baseline | Endline | Baseline | Endline | Baseline | Endline |
| Observations | 800 | 786 | 797 | 781 | 800 | 770 |
| | | | | | | |
| Employment (percent) | | | | | | |
| …Farm wage | 42c | 30a | 48b | 35b | 36 a | 27a |
| …Nonfarm wage | 75a | 93c | 76a | 82b | 58b | 66a |
| …Farm self | 42b | 37 | 43ab | 42 | 47a | 40 |
| …Nonfarm self | 31b | 32 | 27ab | 31 | 25 a | 32 |
| | | | | | | |
| Wage (taka/day) | | | | | | |
| …Farm wage | 177a | 151b | 175a | 157b | 160b | 137a |
| …Nonfarm wage | 149b | 166b | 136a | 147b | 131a | 144a |

**Note:** Letters "a," "b," and "c" imply statistical difference at 10 percent significance level using the Tukey-Kramer test.

## 3.9 Land Tenancy and Farm Size

Table 3.9 demonstrates land tenancy arrangement and farm size distribution of the sample households. The share of "pure tenants" among ER+ households increased slightly from baseline to endline (59 percent) – that is, they do not own any cultivable land. This share is considerably higher compared to the same share in rural Bangladesh (34 percent). Furthermore, the share of households that cultivate their own land is 9 percent at endline, which is considerably lower than the 37 percent of farmers cultivating their own land at the national level. Both ER and Control groups have a similar distribution of land tenancy arrangements as ER+ households. This result is expected because ER and ER+ households are poorer (in terms

of land assets) compared to the typical rural household in Bangladesh. Therefore, there is no significant impact of the ER+ program on land tenancy.

Moreover, the distribution of farmers by size of operative land also supports that ER and ER+ households are poorer (in terms of land assets) compared to the average rural households in Bangladesh. Roughly 65 percent of ER+ farmers and 71 percent of ER households are marginal farmers, which is a share almost twice as large as the share of marginal farmers in rural Bangladesh (36 percent). This emphasizes the fact that ER+ (and ER) households have very small production units.

**Table 3.9 Land tenure patterns and farm size**

| | ER+ | | ER | | Control | |
|---|---|---|---|---|---|---|
| | Baseline | Endline | Baseline | Endline | Baseline | Endline |
| Observations | 800 | 786 | 797 | 781 | 800 | 770 |
| | | | | | | |
| Land tenancy (percent) | | | | | | |
| …Pure tenant | 54.7 | 58.7b | 53.9 | 55.6ab | 52.1 | 52.7a |
| …own land only | 7.8a | 9.1a | 7.5a | 8.3a | 0.8b | 2.4b |
| …mixed tenant | 19.7a | 25.7c | 17.6a | 20.2b | 3.6b | 6.6a |
| | | | | | | |
| Farm size (percent) | | | | | | |
| Marginal farmer (<0.5 acres) | 65.8b | 65.5a | 75.4a | 71.2ab | 87.3a | 79.8b |
| Small farmer (0.5-1.49 acres) | 25.1 | 28.6b | 20.8 | 23.2ab | 12.7 | 18.0a |
| Medium farmer (1.5-2.49 acres) | 4.9 | 4.9 | 2.3 | 4.6 | 0 | 1.1 |
| Large farmer (>2.5 acres) | 4.2 | 1 | 1.5 | 1.1 | 0 | 1.1 |

**Note:** Letters "a," "b," and "c" imply statistical difference at 10 percent significance level using the Tukey-Kramer test.

**3.10 Savings**

Table 3.10 shows the results of the analysis on savings. While the share of households with savings has decreased among all groups, more ER+ households have been able to save compared to the other groups. Around 71 percent of ER+ households have savings, which is a 20 to 30 percent higher share of households compared to the other groups. It is important to note that the ER+ group has a higher share of household having savings than what is typical in rural Bangladesh (59 percent of households). This is an interesting result because it shows that ER households are being encouraged to save, even if these households are, in fact, poorer compared to the average rural household in Bangladesh. Furthermore, since there is a smaller decline of households with savings among the ER+ group, this might suggest a possible avenue of positive impact of the ER+ program.

**Table 3.10 Prevalence of savings and use of savings across groups**

| | ER+ | | ER | | Control | |
|---|---|---|---|---|---|---|
| | Baseline | Endline | Baseline | Endline | Baseline | Endline |
| Observations | 800 | 786 | 797 | 781 | 800 | 770 |
| | | | | | | |
| Household savings | | | | | | |
| …Share of Households who had any savings in the past 1 year (percent) | 86b | 71c | 82b | 52b | 61a | 43a |
| ...Total amount of savings (taka) | 2,768c | 5,544c | 2,099b | 2,706b | 920a | 1,593a |
| | | | | | | |
| Share of households' use of savings (percent) | | | | | | |
| …To buy assets | 22b | 18c | 15a | 13b | 9a | 7a |
| …To start investment | 11 | 17b | 8 | 10a | 9 | 10a |
| …To prepare for difficult times/danger | 52 | 47 | 50 | 47 | 47 | 45 |
| …For the future of children | 22 | 26b | 25 | 22ab | 24 | 20a |
| Share of HHs having a nonag enterprise (percent) | 21b | 33 | 20b | 30 | 15a | 32 |

**Note:** Letters "a," "b," and "c" imply statistical difference at 10 percent significance level using the Tukey-Kramer test.

Table 3.10 also shows that the total amount of savings among all groups. ER+ households doubled their savings by 100 percent, greater than control and ER households, whereas ER households increased savings, on average, by 29 percent. It is useful to note that the average total amount of savings for ER+ households at baseline was roughly 30 percent below the average total amount of savings for the lowest income quintile of rural households in Bangladesh (Taka 3,807). Meanwhile, ER+ households' significant increase in savings puts them roughly 46 percent above the mentioned average at endline, which may demonstrate important positive impacts of ER+ program participation.

Furthermore, ER+ households tend to use their savings to buy productive assets and start investments more frequently than the other two groups, more than the average rural household with savings in Bangladesh. This is interesting because it implies that ER+ households are not just encouraged to save, but they are also encouraged to save for productive/entrepreneurial reasons.

Thus, even if ER+ households are encouraged to save for a purpose, all groups use their savings mainly to prepare for difficult or dangerous times, and for the future of the children in the household. This is not surprising as rural households in Bangladesh show similar savings patterns.

## 3.11 Access to Facilities

Table 3.11 shows the analysis of access to facilities. The results show that ER+ households are located further away from facilities, with the exception of railway stations compared to ER and

control households. This may be related to the upazilas that were selected for this study, and might imply that ER+ households have slightly higher transaction costs.

**Table 3.11 Household access to facilities by sample type**

|  | ER+ | | ER | | Control | |
|---|---|---|---|---|---|---|
|  | Baseline | Endline | Baseline | Endline | Baseline | Endline |
| Observations | 800 | 786 | 797 | 781 | 800 | 770 |
| | | | | | | |
| Distance to facilities (km) | | | | | | |
| Health center | 4.9c | 3.8c | 3.1b | 3.2b | 2.5a | 2.0a |
| Bus stop | 8.7b | 8.0c | 7.1a | 6.5b | 6.3a | 5.8a |
| Railway station | 114.6 | 80.2ab | 141.3 | 82.8b | 125.4 | 72.8a |
| Hospital | 9.6b | 10.3a | 7.9a | 9.3b | 7.9a | 8.0c |

**Note:** Letters "a," "b," and "c" imply statistical difference at 10 percent significance level using the Tukey-Kramer test.

## 3.12 Participation in Social Safety Net Programs

This survey collected information on social safety net participation and benefits received by participating households. Table 3.12 demonstrates that ER+ and ER programs were relatively well-targeted. Households across all groups had relatively similar participation rates in education-related safety net programs (for example, stipend for primary students, school feeding programs, and stipend for secondary/higher secondary). The primary education stipend program has the highest coverage of households among all safety net programs. Around 38 percent of ER+ households participate in this program compared to 41 percent coverage among ER households. Both groups have higher coverage compared to the average participation at the national level – only about 22 percent of all households, and 33 percent of households within the lowest income quintile, are beneficiaries of this program. Only 2 percent of households in rural Bangladesh participate in the school feeding program, which is in sharp contrast to the 41 percent of ER+ households. At endline, participation in VGD and VGF programs increased sharply among ER+ households, and both ER and Control groups experienced similar trends. Again, these results imply that ER+ households are among the poorest rural households in Bangladesh.

**Table 3.12 Share of households that participated in social safety net programs**

| | ER+ | | ER | | Control | |
|---|---|---|---|---|---|---|
| | Baseline | Endline | Baseline | Endline | Baseline | Endline |
| Observations | 800 | 786 | 797 | 781 | 800 | 770 |
| | | | | | | |
| _Participation in safety net programs (percent)_ | | | | | | |
| ER | 75c | 1a | 97b | 58 b | 0a | 12a |
| ER+ | 98c | 100b | 2b | 12a | 0a | 12a |
| Stipend for primary students | 43b | 38 | 43b | 41 | 37a | 38 |
| School feeding program | 40 | 41 | 38 | 37 | 37 | 36 |
| Stipend for secondary/higher secondary | 7b | 4a | 8b | 7b | 4a | 4a |
| Old age allowance | 7 | 6 b | 6 | 3a | 7 | 6b |
| VGD | 1a | 5 b | 2ab | 3a | 3b | 7b |
| VGF | 2a | 11a | 4a | 14a | 10b | 20b |
| Others | 25a | 14 | 23a | 14 | 36b | 16 |

**Note:** Letters "a," "b," and "c" imply statistical difference at 10 percent significance level using the Tukey-Kramer test.

# 4. IMPACT ASSESSMENT OF THE ER+ PROGRAM

To analyze the impact of the ER+ program, we must examine the differences of any given outcome indicator across groups netting out the effect of other intrinsic or explicit characteristics of the household. For example, in the previous section we have seen that per capita food consumption among ER+ program participants is about Taka 50 higher than households in the other two control groups, yet we are unable to attribute this change to the ER+ program for two main reasons: First, we do not know if food consumption was already higher among the ER+ participant households when compared with the other two groups. Second, we are unable to control for other household characteristics that could affect consumption, such as household size, employment situation, agricultural production, and so on.

## 4.1 Estimation Procedure

As mentioned in Section 2, we applied panel data econometric methods to estimate impacts of the ER+ program on outcomes. We estimated several econometric models to analyze the impact of the ER+ program in order to enhance the robustness of our results, and take into consideration the nature of the outcome indicator variables. For continuous outcome variables—such as food and nonfood expenditures, total amount of savings, etc.—we used both fixed effects (difference-in-differences) and random effects models. For binary response outcome variables such as participation in nonagricultural enterprises (i.e., "yes" or "no"), we estimate probit models with population-averaged effects and random effects models. The advantage of using these methods is that they have the ability to control for unobserved characteristics that could affect the desired outcome indicators and therefore bias our results of the impact of the ER+ program.[3]

Furthermore, our analysis examined: (1) the effects of ER+ program within the full sample, hence comparing with control 1 (ER participants) and control 2 subsamples, and (2) the effects of the ER+ program comparing it only to the sample of ER program participants.

The econometric estimation proved to be robust. Consistent estimates were generated regardless of estimation method and sample used; therefore, we chose to only discuss the

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[3] A common example of an important unobserved characteristic is "natural ability" of the household. Some households are more prone to, for example, invest in nonagricultural enterprises due to their natural ability to be engaged in businesses. This is an unobserved characteristic that will be difficult to control without the implementation of panel data methods that enable us to "net out" its effect from our econometric regression.

results using the difference-in-differences (DID) estimation comparing ER+ with ER households. This set of results shows the impact of the addition of the ER+ to the ER program. All other results of estimated models are reported in the Appendix A.

Although our econometric results show interesting effects of many household characteristics on different outcome indicators, we have chosen to focus the discussion of the results only on the effect of the ER+ program participation, as this is the main objective of this study. The following subsections describe the results of the impact ER+ program participation on various outcomes.

**4.2 Food and Nonfood Consumption and Savings**

Table 4.1 shows the results of the impact analysis of the ER+ program participation on total food and nonfood per capita monthly expenditures and total amount of savings of households.

**Table 4.1 Effects of ER+ program on per capita expenditure and savings**

|  | Per Capita Food Expenditure | Total Per Capita Expenditure | Total Amount of Savings |
|---|---|---|---|
| Participation in ER+ (yes=1, no=0) | 47.408** | 66.341*** | 2,802.465*** |
|  | (22.216) | (25.264) | (429.578) |
| Household size | -124.741*** | -142.289*** | 129.929 |
|  | (24.877) | (27.905) | (481.021) |
| Number of adults in the household | 96.573*** | 123.084*** | 69.483 |
|  | (23.607) | (26.719) | (456.478) |
| At least a member of the HH works in nonfarm employment (yes=1, no=0) | 49.426 | 41.025 | 67.976 |
|  | (31.782) | (35.842) | (614.537) |
| Household head is female (yes=1, no=0) | -47.493 | -40.225 | -1,854.448 |
|  | (75.522) | (85.298) | (1,460.308) |
| Age of the household head | 0.013 | 2.475 | -6.393 |
|  | (3.375) | (3.741) | (65.261) |
| Years of education of the household head | -7.550 | -12.177 | -183.728 |
|  | (15.761) | (18.029) | (304.749) |
| Household head is married (yes=1, no=0) | 86.621 | 88.452 | 2,478.379 |
|  | (104.758) | (116.413) | (2,025.624) |
| At least a member of the HH receives remittances (yes=1, no=0) | 10.151 | 10.315 | 449.965 |
|  | (23.900) | (26.787) | (462.135) |
| At least a member of the HH receives other types of private transfers (yes=1, no=0) | -30.678 | -5.288 | -849.842 |
|  | (44.519) | (50.706) | (860.819) |
| Constant | 1,242.832*** | 1,357.332*** | 637.431 |
|  | (212.379) | (236.163) | (4,106.608) |
| Observations | 3,134 | 3,054 | 3,134 |
| Number of households | 1,567 | 1,567 | 1,567 |
| F statistic | 4.035 | 4.465 | 5.477 |
| Prob >F | 0.000 | 0.000 | 0.000 |

**Note:** Robust standard errors are in parentheses. Coefficient estimates are significant at the * 10 percent level; ** 5 percent level; *** 1 percent level.

First, participation in the ER+ program increases per capita monthly food expenditure. ER+ participation has an increase of about Taka 47 in per capita food consumption. This is an important result as one of the program's main objectives is to improve food consumption among ultra poor rural households in Bangladesh.

Second, participation in the ER+ program also increases nonfood expenditure. The ER+ program has led to an increase of Taka 66 in participants' total per capita monthly expenditure, once again fulfilling one of the main objectives of the program to improve the welfare of ultra poor households.

Third, participation in the ER+ program has a positive effect on the total amount of savings of the household, as ER+ participants have about Taka 2,800 more in total savings compared to households who have only participated in ER program. This is an reassuring result; ER+ participants have been encouraged to save, and as seen in the descriptive section, their average total amount of savings is more than the average amount of savings held by a typical ultra poor rural household in Bangladesh (Ahmed et al. 2013).

**4.3 Household Assets**

Table 4.2 shows the results of the impact analysis of the ER+ program participation on total value of durables, including farm and nonfarm assets. Participation in the ER+ program has a positive effect on accumulation of farm assets. This implies that ER+ can have a positive effect on adoption of new farm technologies, and therefore intensification and modernization of farms.

Participation in the ER+ program also has a positive effect on accumulation of durable assets. The effect on accumulation of durable assets is much smaller compared to farm assets. Nevertheless, expanded asset bases reduce the vulnerability of households to short-term disruptions in income flows, because part of the asset base can be sold in times of adversity, such as disasters. This helps to prevent degradation of household food security.

Our results have also shown that ER+ participation has a positive effect on accumulation of nonfarm production assets, which could help diversify their income sources by engaging in more income generating activities.

**Table 4.2 Effects of ER+ program on household assets outcome variables**

| | Total Value of Assets | Value of Durable Assets | Value of Nonfarm Assets | Value of Farm Assets |
|---|---|---|---|---|
| Participation in ER+ (yes=1, no=0) | 10.640*** | 0.274*** | 1.941*** | 8.426*** |
| | (0.587) | (0.031) | (0.218) | (0.528) |
| Household size | 0.472 | 0.147*** | 0.473* | -0.148 |
| | (0.657) | (0.034) | (0.244) | (0.591) |
| Number of adults in the household | 2.057*** | 0.093*** | 0.307 | 1.657*** |
| | (0.624) | (0.032) | (0.232) | (0.561) |
| At least a member of the HH works in | -2.010** | -0.032 | -0.350 | -1.628** |
| nonfarm employment (yes=1, no=0) | (0.840) | (0.044) | (0.312) | (0.755) |
| Household head is female (yes=1, no=0) | 2.291 | 0.216** | -0.267 | 2.343 |
| | (1.996) | (0.104) | (0.741) | (1.795) |
| Age of the household head | 0.394*** | 0.009* | 0.090*** | 0.295*** |
| | (0.089) | (0.005) | (0.033) | (0.080) |
| Years of education of the household head | 0.712* | 0.022 | 0.083 | 0.607 |
| | (0.416) | (0.022) | (0.155) | (0.375) |
| Household head is married (yes=1, no=0) | 3.267 | 0.292** | 0.967 | 2.008 |
| | (2.768) | (0.144) | (1.028) | (2.490) |
| At least a member of the HH receives | 0.451 | 0.063* | 0.040 | 0.348 |
| remittances (yes=1, no=0) | (0.632) | (0.033) | (0.234) | (0.568) |
| At least a member of the HH receives other | -0.759 | 0.029 | 0.037 | -0.826 |
| types of private transfers (yes=1, no=0) | (1.176) | (0.061) | (0.437) | (1.058) |
| Total size of own operated land (decimals) | | | | |
| Constant | -11.551** | 0.316 | -3.566* | -8.300 |
| | (5.612) | (0.292) | (2.083) | (5.048) |
| Observations | 3,134 | 3,134 | 3,134 | 3,134 |
| Number of households | 1,567 | 1,567 | 1,567 | 1,567 |
| F statistic | 23.70 | 13.56 | 35.50 | 40.44 |
| Prob >F | 0.000 | 0.000 | 0.000 | 0.000 |

**Note:** Robust standard errors are in parentheses. Coefficient estimates are significant at the * 10 percent level; ** 5 percent level; *** 1 percent level.

## 4.4 Participation in Non-Agricultural Enterprises and the Purpose of Savings

Table 4.3 shows the results of the impact analysis of the ER+ program on participation in non-agricultural enterprises, decision to have savings, and decision to save for entrepreneurial purposes. ER+ participation has a positive effect on participation in nonagricultural enterprises. ER+ participants are diversifying their sources of income and investing in nonfarm self-employment, which could help them move out of poverty.

Participation in the ER+ program also has a positive effect on the household decision to have savings, and particularly to save for assets or future investments.

**Table 4.3 Effects of ER+ program on HH non-agricultural enterprises, and savings**

| | HH has a non-agricultural enterprise | HH has savings | HH saves for buying assets and future investments |
|---|---|---|---|
| Participation in ER+ (yes=1, no=0) | 0.383*** | 0.121** | 0.167*** |
| | (0.057) | (0.053) | (0.059) |
| Household size | 0.016 | 0.029 | 0.005 |
| | (0.021) | (0.019) | (0.020) |
| Number of adults in the household | 0.102*** | -0.011 | -0.046 |
| | (0.033) | (0.030) | (0.033) |
| At least a member of the HH works in nonfarm employment (yes=1, no=0) | 1.021*** | 0.137*** | 0.119** |
| | (0.062) | (0.049) | (0.055) |
| Household head is female (yes=1, no=0) | -0.351*** | 0.118 | 0.175* |
| | (0.105) | (0.089) | (0.095) |
| Age of the household head | -0.006*** | -0.001 | 0.002 |
| | (0.002) | (0.002) | (0.002) |
| Years of education of the household head | 0.023** | 0.018* | 0.004 |
| | (0.010) | (0.009) | (0.010) |
| Household head is married (yes=1, no=0) | 0.137 | 0.296*** | 0.198* |
| | (0.118) | (0.096) | (0.105) |
| At least a member of the HH receives remittances (yes=1, no=0) | 0.101* | -0.072 | -0.061 |
| | (0.055) | (0.049) | (0.056) |
| At least a member of the HH receives other types of private transfers (yes=1, no=0) | 0.046 | -0.089 | 0.106 |
| | (0.109) | (0.096) | (0.106) |
| Total size of own operated land (decimals) | -0.002 | 0.000 | -0.001 |
| | (0.002) | (0.001) | (0.002) |
| Distance to the nearest health center (kms) | 0.002 | 0.007 | 0.008* |
| | (0.005) | (0.005) | (0.005) |
| Distance to the nearest bus stop (kms) | -0.014** | -0.003 | -0.008 |
| | (0.006) | (0.002) | (0.006) |
| Distance to the nearest main road (kms) | -0.014* | -0.001 | 0.004 |
| | (0.008) | (0.004) | (0.004) |
| Distance to the nearest bazar (kms) | -0.015 | 0.004 | -0.001 |
| | (0.010) | (0.007) | (0.007) |
| Distance to the nearest agricultural extension office (Kms) | -0.002 | -0.012*** | 0.001 |
| | (0.006) | (0.004) | (0.005) |
| Constant | -1.418*** | 0.085 | -1.221*** |
| | (0.187) | (0.159) | (0.177) |
| | | | |
| Observations | 3,134 | 3,134 | 3,134 |
| Number of households | 1,567 | 1,567 | 1,567 |
| Chi squared statistic | 400.4 | 53.69 | 29.58 |
| Prob >F | 0.000 | 0.000 | 0.020 |

**Note:** Robust standard errors are in parentheses. Coefficient estimates are significant at the * 10 percent level; ** 5 percent level; *** 1 percent level.

## 4.5 Agricultural Outcomes

Participation in ER+ program leads to increased rice production (Table 4.4). This result implies that ER+ participants who are farmers are using the benefits from program participation to improve their farming practices that result in higher rice yields. However, there are no effects of ER+ participation on rice and non-rice areas and non-rice crop production.

**Table 4.4 Effects of ER+ program on agricultural outcomes**

|  | Rice Area (decimals) | Non Rice Area (decimals) | Rice Kgs | Non Rice Kgs |
|---|---|---|---|---|
| Participation in ER+ (yes=1, no=0) | -0.839 | -0.639 | 73.518* | 74.542 |
|  | (4.040) | (2.809) | (41.754) | (162.764) |
| Household size | 3.411 | 2.075 | 39.799 | 98.606 |
|  | (3.993) | (2.776) | (41.271) | (160.885) |
| Number of adults in the household | 13.234*** | 2.618 | 108.224** | -5.549 |
|  | (4.059) | (2.822) | (41.952) | (163.538) |
| At least a member of the HH works in nonfarm employment (yes=1, no=0) | -16.427*** | -5.165 | -135.811** | -38.775 |
|  | (6.221) | (4.325) | (64.293) | (250.627) |
| Household head is female (yes=1, no=0) | 28.055* | 5.568 | 291.542* | 96.498 |
|  | (14.546) | (10.112) | (150.331) | (586.023) |
| Age of the household head | 0.931 | 0.359 | 13.850** | 11.473 |
|  | (0.583) | (0.406) | (6.029) | (23.503) |
| Years of education of the household head | 1.757 | 1.710 | 5.263 | 164.166 |
|  | (2.488) | (1.729) | (25.710) | (100.222) |
| Household head is married (yes=1, no=0) | 13.914 | 1.433 | 248.774 | -80.480 |
|  | (22.220) | (15.446) | (229.637) | (895.173) |
| At least a member of the HH receives remittances (yes=1, no=0) | 0.730 | 2.428 | -18.175 | 37.147 |
|  | (4.430) | (3.080) | (45.786) | (178.485) |
| At least a member of the HH receives other types of private transfers (yes=1, no=0) | -9.826 | -5.305 | -72.216 | 37.269 |
|  | (9.858) | (6.853) | (101.877) | (397.139) |
| Constant | -65.051* | -17.198 | -893.441** | -968.271 |
|  | (38.935) | (27.066) | (402.385) | (1,568.580) |
| Observations | 1,370 | 1,370 | 1,370 | 1,370 |
| Number of households | 685 | 685 | 685 | 685 |
| F statistic | 2.406 | 0.592 | 2.718 | 0.367 |
| Prob >F |  | 0.821 | 0.003 | 0.961 |

**Note:** Robust standard errors are in parentheses. Coefficient estimates are significant at the * 10 percent level; ** 5 percent level; *** 1 percent level.

# 5. CONCLUSIONS

Both the econometric and descriptive analyses present striking results on the ER+ program's impact on ultra poor households in Bangladesh. Although ER+ program participants are among the poorest rural households in the country (comparable to the lowest income quintile of rural households in Bangladesh), these households demonstrate encouraging progress, especially compared to the two control groups.

First, the ER+ program helped many ultra poor households move out of poverty. Our study demonstrates that ER+ program participants experienced significant improvements on poverty reduction, in the past two years, there are 5 percent more ER+ households that crossed the poverty line, and ER+ households are the only group with increased total per capita income.

Second, our results show that ER+ participants experienced greater improvements in food consumption than control groups. ER+ households (1) increased their Food Consumption Score (FCS); (2) had the sharpest decrease of households with poor consumption level; (3) had a greater increase of households with acceptable consumption levels; and (4) although there is no difference in consumption of rice, vegetables, and potatoes compared to control groups, ER+ households had significant improvements in consumption of other nutritious foods such as fish, oils, and fats. This is an encouraging result as one of the program's main objectives is to improve food consumption among ultra poor households.

Third, the ER+ program helped ultra poor households accumulate wealth. ER+ participants accumulated four to five times more assets than the control groups in the past two years, especially farm and nonfarm productive assets. These farm and nonfarm productive assets may be used by ER+ households to improve their farm technology, and/or diversify into other nonfarm income generating activities that would mitigate risk, diversify income, and then help households move out of poverty.

Fourth, the ER+ program helped diversify incomes of participating households through nonfarm employment. ER+ participants had greater increases in participation in rural nonfarm wage employment as a source of income, with 8 percent more ER+ households having two or more sources of income over a two-year period. This is an important impact as households with diversified income are more likely to adopt new technologies, have greater access to credit, and thus are more protected against production risk and less likely to fall into poverty.

Fifth, the ER+ program better prepared participating households to cope with negative shocks. Our analysis shows that ER+ households had greater reductions in their coping strategy index (CSI), and therefore responded with fewer severe behaviors when they encounter food shortages, which shows an improved ability to cope with negative shocks.

Sixth, the results related to women's decision-making are very encouraging as well, demonstrating that ER+ program participants (female married respondents) had significant improvements in their decision to work and spend their own income. Women led decisions related to children's education, family planning, and daughters' marriages.

Seventh, the ER+ program encouraged poor households to save. The majority of ER+ households had savings, and they increased their amounts of savings compared to control groups. Furthermore, ER+ households tend to use their savings to buy productive assets and start investments more frequently than other groups. Therefore, ER+ households are not just encouraged to save, but they are also encouraged to save for productive/entrepreneurial purposes.

Overall, the results of our evaluation show a positive transformation of ultra poor households from participation in the ER+ program. From baseline to endline surveys, we observed participating rural households moving out of poverty, increasing food consumption, actively participating in income generating activities, women getting empowered, and increasing overall welfare. All of these changes demonstrate the success of the ER+ program.

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**APPENDIX A**

# Table A.1a Effects of ER+ program on savings and consumption outcome variables using fixed and random effects

| Variable | Per capita food expenditure | | Total per capita expenditure | | Total amount of savings | |
|---|---|---|---|---|---|---|
| | (FE) | (RE) | (FE) | (RE) | (FE) | (RE) |
| Participation in ER+ (yes=1, no=0) | 52.031* | 35.734* | 70.629** | 55.054** | 2,703.388*** | 3,320.720*** |
| | (26.686) | (21.327) | (29.783) | (23.419) | (382.739) | (301.414) |
| Household size | -130.333*** | -114.851*** | -145.537*** | -138.890*** | 247.761 | 160.824* |
| | (26.206) | (6.743) | (28.792) | (7.604) | (375.854) | (92.847) |
| Number of adults in the household | 90.876*** | 61.989*** | 116.349*** | 97.385*** | -31.724 | 115.142 |
| | (25.171) | (10.863) | (27.802) | (12.220) | (361.007) | (150.135) |
| At least a member of the HH works in nonfarm employment (yes=1, no=0) | 81.620*** | 27.732 | 78.461** | 22.833 | 151.815 | 50.956 |
| | (31.445) | (17.117) | (34.626) | (19.170) | (450.995) | (237.742) |
| Household head is female (yes=1, no=0) | -50.508 | -66.914** | -35.400 | -68.933** | -453.833 | 403.895 |
| | (73.184) | (29.651) | (80.569) | (33.436) | (1,049.629) | (410.028) |
| Age of the household head | -1.888 | 4.207*** | 0.362 | 4.996*** | 5.143 | 25.327** |
| | (3.461) | (0.760) | (3.767) | (0.859) | (49.640) | (10.445) |
| Years of education of the household head | -3.381 | 11.097*** | -7.204 | 20.479*** | -60.153 | 171.148*** |
| | (14.397) | (3.339) | (15.863) | (3.768) | (206.488) | (45.881) |
| Household head is married (yes=1, no=0) | 117.396 | -74.770** | 153.042 | -46.636 | 1,931.336 | 816.951* |
| | (99.399) | (32.100) | (109.582) | (36.209) | (1,425.602) | (443.107) |
| At least a member of the HH receives remittances (yes=1, no=0) | -1.833 | 6.166 | -6.320 | -7.080 | 523.699 | -226.240 |
| | (23.468) | (16.908) | (25.711) | (18.741) | (336.586) | (237.264) |
| At least a member of the HH receives other types of private transfers (yes=1, no=0) | -43.649 | -55.549* | -31.387 | -59.061* | -441.717 | -869.911** |
| | (41.628) | (30.502) | (46.294) | (33.974) | (597.038) | (428.261) |
| Total size of own operated land (decimals) | | 0.372 | | 1.758*** | | -4.152 |
| | | (0.578) | | (0.650) | | (7.928) |
| Distance to the nearest health center (km) | | -0.596 | | -1.924 | | 15.487 |
| | | (1.562) | | (1.760) | | (21.419) |
| Distance to the nearest bus stop (km) | | -0.079 | | 0.177 | | -6.181 |
| | | (0.753) | | (0.847) | | (10.318) |
| Distance to the nearest main road (km) | | -0.549 | | -2.427 | | -4.023 |
| | | (1.515) | | (1.778) | | (20.767) |
| Distance to the nearest bazar (km) | | 2.371 | | 3.109 | | 55.603 |
| | | (2.507) | | (2.824) | | (34.363) |
| Distance to the nearest agricultural extension office (km) | | -2.094 | | -1.020 | | -33.543 |
| | | (1.659) | | (1.887) | | (22.737) |
| Constant | 1,308.098*** | 1,222.855*** | 1,383.873*** | 1,367.953*** | -588.553 | -725.687 |
| | (204.330) | (54.869) | (222.147) | (61.866) | (2,930.560) | (755.602) |
| Observations | 4,674 | 4,674 | 4,571 | 4,571 | 4,674 | 4,674 |
| Number of households | 2,337 | 2,337 | 2,337 | 2,337 | 2,337 | 2,337 |
| F statistic | 4.227 | | 4.499 | | 6.531 | |
| Prob >F | 0.000 | | 0.000 | | 0.000 | |
| Chi squared statistic | | 423.2 | | 458.9 | | 187.5 |
| Prob >F | | 0.000 | | 0.000 | | 0.000 |

**Note:** Robust standard errors are in parentheses. Coefficient estimates are significant at the * 10 percent level; ** 5 percent level; *** 1 percent level.

## Table A.1b Effects of ER+ program on savings and consumption outcome variables using fixed and random effects

| Variable | Per capita food expenditure (FE) | Per capita food expenditure (RE) | Total per capita expenditure (FE) | Total per capita expenditure (RE) | Total amount of savings (FE) | Total amount of savings (RE) |
|---|---|---|---|---|---|---|
| Participation in ER+ (yes=1, no=0) | 47.408** | 19.989 | 66.341*** | 35.051* | 2,802.465*** | 2,991.393*** |
|  | (22.216) | (18.410) | (25.264) | (20.799) | (429.578) | (347.482) |
| Household size | -124.741*** | -104.190*** | -142.289*** | -129.972*** | 129.929 | 180.114 |
|  | (24.877) | (6.826) | (27.905) | (8.090) | (481.021) | (122.125) |
| Number of adults in the household | 96.573*** | 53.504*** | 123.084*** | 90.797*** | 69.483 | 100.500 |
|  | (23.607) | (10.737) | (26.719) | (12.674) | (456.478) | (193.469) |
| At least a member of the HH works in nonfarm employment (yes=1, no=0) | 49.426 | 34.438* | 41.025 | 29.199 | 67.976 | 184.815 |
|  | (31.782) | (17.870) | (35.842) | (20.911) | (614.537) | (324.892) |
| Household head is female (yes=1, no=0) | -47.493 | -88.685*** | -40.225 | -83.837** | -1,854.448 | 531.074 |
|  | (75.522) | (32.092) | (85.298) | (37.867) | (1,460.308) | (578.720) |
| Age of the household head | 0.013 | 4.441*** | 2.475 | 5.415*** | -6.393 | 34.987** |
|  | (3.375) | (0.785) | (3.741) | (0.935) | (65.261) | (13.963) |
| Years of education of the household head | -7.550 | 14.774*** | -12.177 | 26.293*** | -183.728 | 196.565*** |
|  | (15.761) | (3.414) | (18.029) | (4.073) | (304.749) | (60.706) |
| Household head is married (yes=1, no=0) | 86.621 | -101.454*** | 88.452 | -85.084** | 2,478.379 | 771.156 |
|  | (104.758) | (35.290) | (116.413) | (41.705) | (2,025.624) | (633.983) |
| At least a member of the HH receives remittances (yes=1, no=0) | 10.151 | 28.990* | 10.315 | 23.721 | 449.965 | -348.503 |
|  | (23.900) | (17.572) | (26.787) | (20.153) | (462.135) | (325.738) |
| At least a member of the HH receives other types of private transfers (yes=1, no=0) | -30.678 | 4.630 | -5.288 | 5.319 | -849.842 | -909.221 |
|  | (44.519) | (34.261) | (50.706) | (39.459) | (860.819) | (637.842) |
| Total size of own operated land (decimals) |  | 0.171 |  | 1.495** |  | -7.799 |
|  |  | (0.507) |  | (0.602) |  | (8.981) |
| Distance to the nearest health center (km) |  | -0.310 |  | -2.039 |  | 21.733 |
|  |  | (1.645) |  | (1.962) |  | (29.149) |
| Distance to the nearest bus stop (km) |  | -0.334 |  | 0.033 |  | -3.144 |
|  |  | (0.672) |  | (0.800) |  | (11.904) |
| Distance to the nearest main road (km) |  | -0.417 |  | -2.382 |  | -7.824 |
|  |  | (1.361) |  | (1.685) |  | (24.105) |
| Distance to the nearest bazar (km) |  | 3.137 |  | 3.407 |  | 43.634 |
|  |  | (2.319) |  | (2.763) |  | (41.084) |
| Distance to the nearest agricultural extension office (km) |  | -4.265** |  | -3.942** |  | -56.977* |
|  |  | (1.664) |  | (2.002) |  | (29.475) |
| Constant | 1,242.832*** | 1,225.152*** | 1,357.332*** | 1,383.835*** | 637.431 | -699.200 |
|  | (212.379) | (58.468) | (236.163) | (69.413) | (4,106.608) | (1,044.998) |
| Observations | 3,134 | 3,134 | 3,054 | 3,054 | 3,134 | 3,134 |
| Number of households | 1,567 | 1,567 | 1,567 | 1,567 | 1,567 | 1,567 |
| F statistic | 4.035 |  | 4.465 |  | 5.477 |  |
| Prob >F | 0.000 |  | 0.000 |  | 0.000 |  |
| Chi squared statistic |  | 365.4 |  | 390.1 |  | 110.1 |
| Prob >F |  | 0.000 |  | 0.000 |  | 0.000 |

**Note:** Robust standard errors are in parentheses. Coefficient estimates are significant at the * 10 percent level; ** 5 percent level; *** 1 percent level.

**Table A.2a Effects of ER+ program on household assets outcome variables using fixed and random effects**

| VARIABLES | Total value of assets (FE) | Total value of assets (RE) | Value of durable assets (FE) | Value of durable assets (RE) | Value of nonfarm assets (FE) | Value of nonfarm assets (RE) | Value of farm assets (FE) | Value of farm assets (RE) |
|---|---|---|---|---|---|---|---|---|
| Participation in ER+ (yes=1, no=0) | 10.542*** | 10.847*** | 0.271*** | 0.257*** | 1.863*** | 1.924*** | 8.408*** | 8.679*** |
| | (0.511) | (0.468) | (0.029) | (0.027) | (0.197) | (0.180) | (0.456) | (0.417) |
| Household size | 0.916* | 1.856*** | 0.166*** | 0.163*** | 0.694*** | 0.648*** | 0.055 | 1.046*** |
| | (0.502) | (0.219) | (0.029) | (0.014) | (0.194) | (0.082) | (0.447) | (0.193) |
| Number of adults in the household | 1.797*** | 1.838*** | 0.076*** | 0.119*** | 0.381** | 0.741*** | 1.340*** | 0.981*** |
| | (0.482) | (0.323) | (0.028) | (0.020) | (0.186) | (0.122) | (0.430) | (0.285) |
| At least a member of the HH works in nonfarm employment (yes=1, no=0) | -1.339** | -2.152*** | -0.055 | -0.068** | -0.146 | 0.353** | -1.137** | -2.438*** |
| | (0.602) | (0.466) | (0.035) | (0.028) | (0.232) | (0.177) | (0.537) | (0.413) |
| Household head is female (yes=1, no=0) | 2.901** | -1.688* | 0.135* | 0.107** | 0.316 | -0.247 | 2.450** | -1.607** |
| | (1.402) | (0.877) | (0.080) | (0.054) | (0.541) | (0.331) | (1.249) | (0.774) |
| Age of the household head | 0.314*** | 0.151*** | 0.010*** | 0.010*** | 0.093*** | 0.033*** | 0.210*** | 0.106*** |
| | (0.066) | (0.026) | (0.004) | (0.002) | (0.026) | (0.010) | (0.059) | (0.023) |
| Years of education of the household head | 0.516* | 0.684*** | 0.012 | 0.052*** | 0.082 | 0.313*** | 0.421* | 0.320*** |
| | (0.276) | (0.113) | (0.016) | (0.007) | (0.106) | (0.042) | (0.246) | (0.099) |
| Household head is married (yes=1, no=0) | 1.768 | 0.466 | 0.188* | 0.155** | 0.880 | 0.259 | 0.700 | 0.000 |
| | (1.904) | (0.987) | (0.109) | (0.061) | (0.735) | (0.372) | (1.697) | (0.870) |
| At least a member of the HH receives remittances (yes=1, no=0) | 0.575 | 0.286 | 0.050* | 0.092*** | 0.106 | 0.241 | 0.419 | -0.062 |
| | (0.449) | (0.400) | (0.026) | (0.023) | (0.173) | (0.153) | (0.401) | (0.356) |
| At least a member of the HH receives other types of private transfers (yes=1, no=0) | -0.215 | -1.046 | 0.016 | -0.005 | -0.026 | -0.055 | -0.205 | -1.005 |
| | (0.797) | (0.716) | (0.046) | (0.042) | (0.308) | (0.274) | (0.711) | (0.636) |
| Total size of own operated land (decimals) | | 0.241*** | | 0.007*** | | 0.014* | | 0.220*** |
| | | (0.021) | | (0.001) | | (0.008) | | (0.018) |
| Distance to the nearest health center (km) | | 0.093* | | -0.010*** | | 0.002 | | 0.101** |
| | | (0.056) | | (0.004) | | (0.021) | | (0.049) |
| Distance to the nearest bus stop (km) | | 0.021 | | -0.001 | | -0.005 | | 0.026 |
| | | (0.027) | | (0.002) | | (0.010) | | (0.024) |
| Distance to the nearest main road (km) | | 0.021 | | 0.002 | | -0.012 | | 0.031 |
| | | (0.055) | | (0.004) | | (0.020) | | (0.048) |
| Distance to the nearest bazar (km) | | 0.264*** | | -0.014** | | -0.003 | | 0.281*** |
| | | (0.091) | | (0.006) | | (0.034) | | (0.079) |
| Distance to the nearest agricultural extension office (km) | | -0.080 | | 0.004 | | 0.082*** | | -0.166*** |
| | | (0.060) | | (0.004) | | (0.022) | | (0.052) |
| Constant | -10.053** | -5.482*** | 0.302 | 0.196* | -5.301*** | -3.868*** | -5.055 | -1.708 |
| | (3.913) | (1.786) | (0.225) | (0.113) | (1.510) | (0.669) | (3.488) | (1.571) |
| Observations | 4,674 | 4,674 | 4,674 | 4,674 | 4,674 | 4,674 | 4,674 | 4,674 |
| Number of households | 2,337 | 2,337 | 2,337 | 2,337 | 2,337 | 2,337 | 2,337 | 2,337 |
| F statistic | 27.81 | | 16.54 | | 38.66 | | 51.74 | |
| Prob >F | 0.000 | | 0.000 | | 0.000 | | 0.000 | |
| Chi squared statistic | | 601.9 | | 715.2 | | 411.4 | | 1191 |
| Prob >F | | 0.000 | | 0.000 | | 0.000 | | 0.000 |

**Note:** Robust standard errors are in parentheses. Coefficient estimates are significant at the * 10 percent level; ** 5 percent level; *** 1 percent level.

**Table A.2b Effects of ER+ program on household assets outcome variables using fixed and random effects**

| VARIABLES | Total value of assets (FE) | Total value of assets (RE) | Value of durable assets (FE) | Value of durable assets (RE) | Value of nonfarm assets (FE) | Value of nonfarm assets (RE) | Value of farm assets (FE) | Value of farm assets (RE) |
|---|---|---|---|---|---|---|---|---|
| Participation in ER+ (yes=1, no=0) | 10.640*** | 10.469*** | 0.274*** | 0.237*** | 1.941*** | 1.836*** | 8.426*** | 8.402*** |
| | (0.587) | (0.537) | (0.031) | (0.028) | (0.218) | (0.199) | (0.528) | (0.482) |
| Household size | 0.472 | 1.987*** | 0.147*** | 0.171*** | 0.473* | 0.692*** | -0.148 | 1.133*** |
| | (0.657) | (0.286) | (0.034) | (0.017) | (0.244) | (0.105) | (0.591) | (0.253) |
| Number of adults in the household | 2.057*** | 1.971*** | 0.093*** | 0.126*** | 0.307 | 0.763*** | 1.657*** | 1.075*** |
| | (0.624) | (0.416) | (0.032) | (0.023) | (0.232) | (0.153) | (0.561) | (0.370) |
| At least a member of the HH works in nonfarm employment (yes=1, no=0) | -2.010** | -2.351*** | -0.032 | -0.052 | -0.350 | 0.328 | -1.628** | -2.632*** |
| | (0.840) | (0.644) | (0.044) | (0.036) | (0.312) | (0.238) | (0.755) | (0.574) |
| Household head is female (yes=1, no=0) | 2.291 | -1.685 | 0.216** | 0.194*** | -0.267 | -0.067 | 2.343 | -1.853* |
| | (1.996) | (1.241) | (0.104) | (0.070) | (0.741) | (0.457) | (1.795) | (1.103) |
| Age of the household head | 0.394*** | 0.151*** | 0.009* | 0.011*** | 0.090*** | 0.033*** | 0.295*** | 0.105*** |
| | (0.089) | (0.034) | (0.005) | (0.002) | (0.033) | (0.013) | (0.080) | (0.030) |
| Years of education of the household head | 0.712* | 0.825*** | 0.022 | 0.060*** | 0.083 | 0.390*** | 0.607 | 0.375*** |
| | (0.416) | (0.151) | (0.022) | (0.009) | (0.155) | (0.055) | (0.375) | (0.134) |
| Household head is married (yes=1, no=0) | 3.267 | 0.955 | 0.292** | 0.288*** | 0.967 | 0.530 | 2.008 | 0.094 |
| | (2.768) | (1.418) | (0.144) | (0.081) | (1.028) | (0.521) | (2.490) | (1.259) |
| At least a member of the HH receives remittances (yes=1, no=0) | 0.451 | 0.307 | 0.063* | 0.123*** | 0.040 | 0.250 | 0.348 | -0.089 |
| | (0.632) | (0.559) | (0.033) | (0.030) | (0.234) | (0.207) | (0.568) | (0.501) |
| At least a member of the HH receives other types of private transfers (yes=1, no=0) | -0.759 | -1.372 | 0.029 | -0.015 | 0.037 | 0.140 | -0.826 | -1.502 |
| | (1.176) | (1.063) | (0.061) | (0.057) | (0.437) | (0.394) | (1.058) | (0.953) |
| Total size of own operated land (decimals) | | 0.223*** | | 0.006*** | | 0.010 | | 0.208*** |
| | | (0.023) | | (0.001) | | (0.009) | | (0.021) |
| Distance to the nearest health center (km) | | 0.116 | | -0.012*** | | -0.010 | | 0.138** |
| | | (0.076) | | (0.005) | | (0.028) | | (0.067) |
| Distance to the nearest bus stop (km) | | 0.024 | | -0.000 | | 0.001 | | 0.024 |
| | | (0.031) | | (0.002) | | (0.011) | | (0.028) |
| Distance to the nearest main road (km) | | 0.019 | | -0.000 | | -0.008 | | 0.027 |
| | | (0.063) | | (0.004) | | (0.023) | | (0.056) |
| Distance to the nearest bazar (km) | | 0.266** | | -0.016** | | -0.008 | | 0.290*** |
| | | (0.108) | | (0.007) | | (0.039) | | (0.095) |
| Distance to the nearest agricultural extension office (km) | | -0.172** | | -0.003 | | 0.088*** | | -0.256*** |
| | | (0.077) | | (0.005) | | (0.028) | | (0.068) |
| Constant | -11.551** | -5.052** | 0.316 | 0.090 | -3.566* | -4.321*** | -8.300 | -0.719 |
| | (5.612) | (2.481) | (0.292) | (0.145) | (2.083) | (0.910) | (5.048) | (2.197) |
| Observations | 3,134 | 3,134 | 3,134 | 3,134 | 3,134 | 3,134 | 3,134 | 3,134 |
| Number of households | 1,567 | 1,567 | 1,567 | 1,567 | 1,567 | 1,567 | 1,567 | 1,567 |
| F statistic | 23.70 | | 13.56 | | 35.50 | | 40.44 | |
| Prob >F | 0.000 | | 0.000 | | 0.000 | | 0.000 | |
| Chi squared statistic | | 423.1 | | 545.6 | | 366.6 | | 780.7 |
| Prob >F | | 0.000 | | 0.000 | | 0.000 | | 0.000 |

**Note:** Robust standard errors are in parentheses. Coefficient estimates are significant at the * 10 percent level, ** 5 percent level, *** 1 percent level.

**Table A.3a Effects of ER+ program on HH non-agricultural enterprises, and savings using population averaged and random effects**

| VARIABLES | HH has non-agricultural enterprise | | HH has savings | | HH saves for buying assets and future investments | |
|---|---|---|---|---|---|---|
| | (PA) | (RE) | (PA) | (RE) | (PA) | (RE) |
| Participation in ER+ (yes=1, no=0) | 0.345*** | 0.456*** | 0.222*** | 0.270*** | 0.306*** | 0.332*** |
| | (0.055) | (0.071) | (0.050) | (0.064) | (0.057) | (0.061) |
| Household size | 0.030 | 0.039* | 0.048*** | 0.061*** | 0.019 | 0.020 |
| | (0.018) | (0.024) | (0.016) | (0.020) | (0.018) | (0.020) |
| Number of adults in the household | 0.078*** | 0.097*** | 0.009 | 0.009 | -0.043 | -0.047 |
| | (0.029) | (0.038) | (0.026) | (0.032) | (0.030) | (0.032) |
| At least a member of the HH works in nonfarm employment (yes=1, no=0) | 1.057*** | 1.336*** | 0.114*** | 0.141*** | 0.130*** | 0.144*** |
| | (0.052) | (0.074) | (0.040) | (0.050) | (0.048) | (0.052) |
| Household head is female (yes=1, no=0) | -0.301*** | -0.376*** | -0.091 | -0.109 | 0.088 | 0.095 |
| | (0.083) | (0.107) | (0.069) | (0.087) | (0.082) | (0.087) |
| Age of the household head | -0.003 | -0.004 | 0.001 | 0.001 | 0.004* | 0.004* |
| | (0.002) | (0.003) | (0.002) | (0.002) | (0.002) | (0.002) |
| Years of education of the household head | 0.026*** | 0.033*** | 0.011 | 0.015 | 0.006 | 0.006 |
| | (0.009) | (0.011) | (0.008) | (0.010) | (0.009) | (0.010) |
| Household head is married (yes=1, no=0) | 0.223** | 0.267** | 0.342*** | 0.428*** | 0.243*** | 0.268*** |
| | (0.092) | (0.119) | (0.075) | (0.095) | (0.090) | (0.097) |
| At least a member of the HH receives remittances (yes=1, no=0) | 0.045 | 0.073 | -0.046 | -0.057 | -0.122** | -0.131** |
| | (0.045) | (0.058) | (0.039) | (0.049) | (0.049) | (0.052) |
| At least a member of the HH receives other types of private transfers (yes=1, no=0) | 0.035 | 0.041 | -0.199*** | -0.248*** | -0.019 | -0.021 |
| | (0.082) | (0.104) | (0.070) | (0.088) | (0.088) | (0.094) |
| Total size of own operated land (decimals) | -0.002 | -0.003 | 0.002 | 0.002 | 0.000 | 0.000 |
| | (0.002) | (0.002) | (0.002) | (0.002) | (0.001) | (0.002) |
| Distance to the nearest health center (km) | 0.001 | 0.001 | 0.002 | 0.003 | 0.006 | 0.006 |
| | (0.005) | (0.006) | (0.004) | (0.005) | (0.004) | (0.004) |
| Distance to the nearest bus stop (km) | -0.008 | -0.011 | -0.004 | -0.004* | -0.014*** | -0.016*** |
| | (0.005) | (0.007) | (0.002) | (0.002) | (0.005) | (0.006) |
| Distance to the nearest main road (km) | -0.009 | -0.012 | 0.004 | 0.004 | 0.008** | 0.009** |
| | (0.006) | (0.008) | (0.004) | (0.004) | (0.004) | (0.004) |
| Distance to the nearest bazar (km) | -0.015* | -0.018 | 0.011 | 0.014 | 0.005 | 0.006 |
| | (0.009) | (0.011) | (0.007) | (0.009) | (0.006) | (0.007) |
| Distance to the nearest agricultural extension office (km) | -0.003 | -0.004 | 0.002 | 0.002 | 0.010** | 0.011** |
| | (0.005) | (0.006) | (0.004) | (0.005) | (0.005) | (0.005) |
| Constant | -1.660*** | -2.100*** | -0.445*** | -0.565*** | -1.549*** | -1.670*** |
| | (0.153) | (0.208) | (0.131) | (0.165) | (0.153) | (0.170) |
| | | | | | | |
| Observations | 4,674 | 4,674 | 4,674 | 4,674 | 4,674 | 4,674 |
| Number of households | 2,337 | 2,337 | 2,337 | 2,337 | 2,337 | 2,337 |
| Chi squared statistic | 586.8 | 430.0 | 197.0 | 190.5 | 85.28 | 85.95 |
| Prob >F | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

**Note:** Robust standard errors are in parentheses. Coefficient estimates are significant at the * 10 percent level, ** 5 percent level, *** 1 percent level.

**Table A.3b Effects of ER+ program on HH non-agricultural enterprises, and savings using population averaged and random effects**

| VARIABLES | HH has non-agricultural enterprise | | HH has savings | | HH saves for buying assets and future investments | |
|---|---|---|---|---|---|---|
| | (PA) | (RE) | (PA) | (RE) | (PA) | (RE) |
| Participation in ER+ (yes=1, no=0) | 0.383*** | 0.504*** | 0.121** | 0.133** | 0.167*** | 0.179*** |
| | (0.057) | (0.075) | (0.053) | (0.063) | (0.059) | (0.063) |
| Household size | 0.016 | 0.023 | 0.029 | 0.034 | 0.005 | 0.005 |
| | (0.021) | (0.028) | (0.019) | (0.021) | (0.020) | (0.022) |
| Number of adults in the household | 0.102*** | 0.127*** | -0.011 | -0.014 | -0.046 | -0.049 |
| | (0.033) | (0.044) | (0.030) | (0.033) | (0.033) | (0.035) |
| At least a member of the HH works in nonfarm employment (yes=1, no=0) | 1.021*** | 1.288*** | 0.137*** | 0.152*** | 0.119** | 0.130** |
| | (0.062) | (0.088) | (0.049) | (0.055) | (0.055) | (0.059) |
| Household head is female (yes=1, no=0) | -0.351*** | -0.442*** | 0.118 | 0.136 | 0.175* | 0.187* |
| | (0.105) | (0.136) | (0.089) | (0.100) | (0.095) | (0.102) |
| Age of the household head | -0.006*** | -0.008*** | -0.001 | -0.002 | 0.002 | 0.002 |
| | (0.002) | (0.003) | (0.002) | (0.002) | (0.002) | (0.002) |
| Years of education of the household head | 0.023** | 0.030** | 0.018* | 0.021* | 0.004 | 0.004 |
| | (0.010) | (0.013) | (0.009) | (0.011) | (0.010) | (0.011) |
| Household head is married (yes=1, no=0) | 0.137 | 0.152 | 0.296*** | 0.336*** | 0.198* | 0.217* |
| | (0.118) | (0.153) | (0.096) | (0.108) | (0.105) | (0.112) |
| At least a member of the HH receives remittances (yes=1, no=0) | 0.101* | 0.140* | -0.072 | -0.080 | -0.061 | -0.064 |
| | (0.055) | (0.072) | (0.049) | (0.056) | (0.056) | (0.060) |
| At least a member of the HH receives other types of private transfers (yes=1, no=0) | 0.046 | 0.046 | -0.089 | -0.101 | 0.106 | 0.114 |
| | (0.109) | (0.139) | (0.096) | (0.108) | (0.106) | (0.112) |
| Total size of own operated land (decimals) | -0.002 | -0.002 | 0.000 | 0.000 | -0.001 | -0.001 |
| | (0.002) | (0.002) | (0.001) | (0.002) | (0.002) | (0.002) |
| Distance to the nearest health center (km) | 0.002 | 0.003 | 0.007 | 0.008 | 0.008* | 0.009* |
| | (0.005) | (0.007) | (0.005) | (0.006) | (0.005) | (0.005) |
| Distance to the nearest bus stop (km) | -0.014** | -0.019** | -0.003 | -0.003 | -0.008 | -0.009 |
| | (0.006) | (0.009) | (0.002) | (0.002) | (0.006) | (0.006) |
| Distance to the nearest main road (km) | -0.014* | -0.019* | -0.001 | -0.002 | 0.004 | 0.005 |
| | (0.008) | (0.010) | (0.004) | (0.004) | (0.004) | (0.004) |
| Distance to the nearest bazar (km) | -0.015 | -0.018 | 0.004 | 0.004 | -0.001 | -0.001 |
| | (0.010) | (0.013) | (0.007) | (0.008) | (0.007) | (0.008) |
| Distance to the nearest agricultural extension office (km) | -0.002 | -0.003 | -0.012*** | -0.014*** | 0.001 | 0.002 |
| | (0.006) | (0.007) | (0.004) | (0.005) | (0.005) | (0.005) |
| Constant | -1.418*** | -1.771*** | 0.085 | 0.088 | -1.221*** | -1.305*** |
| | (0.187) | (0.252) | (0.159) | (0.180) | (0.177) | (0.191) |
| | | | | | | |
| Observations | 3,134 | 3,134 | 3,134 | 3,134 | 3,134 | 3,134 |
| Number of households | 1,567 | 1,567 | 1,567 | 1,567 | 1,567 | 1,567 |
| Chi squared statistic | 400.4 | 297.8 | 53.69 | 54.17 | 29.58 | 29.67 |
| Prob >F | 0.000 | 0.000 | 0.000 | 0.000 | 0.020 | 0.020 |

**Note:** Robust standard errors are in parentheses. Coefficient estimates are significant at the * 10 percent level, ** 5 percent level, *** 1 percent level.

**Table A.4a Effects of ER+ program on agricultural outcomes using fixed and random effects**

| VARIABLES | Rice Area (decimals) (FE) | Rice Area (decimals) (RE) | Non Rice Area (decimals) (FE) | Non Rice Area (decimals) (RE) | Rice (kg) (FE) | Rice (kg) (RE) | Non Rice (kg) (FE) | Non Rice (kg) (RE) |
|---|---|---|---|---|---|---|---|---|
| Participation in ER+ (yes=1, no=0) | -0.922 | 3.199 | -0.566 | -1.411 | 73.016* | 90.636*** | 89.917 | 68.727 |
| | (3.823) | (3.307) | (2.632) | (2.193) | (40.197) | (34.338) | (154.271) | (122.274) |
| Household size | 3.868 | 2.414* | 1.841 | 2.758*** | 41.357 | 35.893*** | 89.679 | 36.407 |
| | (3.679) | (1.325) | (2.533) | (0.799) | (38.681) | (13.334) | (148.455) | (40.194) |
| Number of adults in the household | 13.118*** | 9.434*** | 2.504 | 2.178* | 111.700*** | 81.080*** | -6.802 | 54.704 |
| | (3.761) | (2.087) | (2.589) | (1.282) | (39.542) | (21.137) | (151.757) | (65.549) |
| At least a member of the HH works in nonfarm employment (yes=1, no=0) | -14.508*** | -7.528** | -6.082 | -6.724*** | -124.688** | -77.709** | -132.651 | -73.054 |
| | (5.516) | (3.376) | (3.797) | (2.094) | (57.992) | (34.299) | (222.566) | (108.058) |
| Household head is female (yes=1, no=0) | 22.957* | 0.480 | 5.788 | -8.219* | 238.863* | 25.946 | 37.872 | 0.620 |
| | (12.479) | (7.056) | (8.590) | (4.359) | (131.196) | (71.594) | (503.516) | (224.096) |
| Age of the household head | 0.868 | 0.472*** | 0.419 | -0.064 | 13.680** | 4.308*** | 7.152 | 3.389 |
| | (0.534) | (0.159) | (0.367) | (0.094) | (5.611) | (1.588) | (21.535) | (4.688) |
| Years of education of the household head | 2.431 | 3.082*** | 1.093 | 0.152 | 19.780 | 31.658*** | 106.574 | 60.540*** |
| | (2.133) | (0.650) | (1.468) | (0.387) | (22.425) | (6.507) | (86.063) | (19.236) |
| Household head is married (yes=1, no=0) | 7.940 | 3.724 | 2.408 | -3.515 | 148.757 | 73.304 | -55.917 | 69.762 |
| | (19.318) | (8.136) | (13.298) | (4.963) | (203.107) | (82.180) | (779.501) | (252.364) |
| | 1.750 | 1.082 | 1.972 | 3.230 | -1.826 | -13.977 | -4.903 | 7.848 |
| At least a member of the HH receives remittances (yes=1, no=0) | (3.885) | (3.134) | (2.675) | (2.030) | (40.849) | (32.299) | (156.772) | (109.792) |
| At least a member of the HH receives other types of private transfers (yes=1, no=0) | -7.678 | -1.083 | -2.828 | -5.288 | -48.566 | -24.283 | 89.665 | 54.166 |
| | (8.522) | (7.084) | (5.866) | (4.614) | (89.593) | (73.150) | (343.846) | (251.111) |
| Total size of own operated land (decimals) | | 0.508*** | | 0.197*** | | 6.334*** | | 1.136 |
| | | (0.076) | | (0.044) | | (0.754) | | (2.189) |
| Distance to the nearest health center (km) | | -0.208 | | 0.318* | | -4.048 | | 14.109* |
| | | (0.292) | | (0.172) | | (2.909) | | (8.445) |
| Distance to the nearest bus stop (km) | | 0.554 | | -0.217 | | 8.909** | | 13.448 |
| | | (0.448) | | (0.264) | | (4.469) | | (12.966) |
| Distance to the nearest main road (km) | | -0.526 | | 0.338* | | -6.073* | | -5.430 |
| | | (0.328) | | (0.193) | | (3.271) | | (9.496) |
| Distance to the nearest bazar (km) | | -0.178 | | 1.265*** | | -7.367 | | 74.247*** |
| | | (0.666) | | (0.392) | | (6.642) | | (19.290) |
| Distance to the nearest agricultural extension office (km) | | -0.730* | | 0.226 | | -7.981* | | -25.015** |
| | | (0.431) | | (0.253) | | (4.293) | | (12.455) |
| Constant | -62.005* | -27.165** | -19.139 | 1.302 | -853.439** | -279.692** | -569.648 | -533.472 |
| | (34.187) | (12.608) | (23.534) | (7.597) | (359.426) | (126.795) | (1,379.438) | (382.101) |
| | | | | | | | | |
| Observations | 1,574 | 1,574 | 1,574 | 1,574 | 1,574 | 1,574 | 1,574 | 1,574 |
| Number of households | 787 | 787 | 787 | 787 | 787 | 787 | 787 | 787 |
| F statistic | 2.787 | | 0.733 | | 3.030 | | 0.289 | |
| Prob >F | | | 0.6938 | | 0.001 | | 0.9838 | |
| Chi squared statistic | | 166.4 | | 117.9 | | 211.1 | | 47.36 |
| Prob >F | | 0.000 | | 0.000 | | 0.000 | | 0.000 |

**Note:** Robust standard errors are in parentheses. Coefficient estimates are significant at the * 10 percent level, ** 5 percent level, *** 1 percent level.

## Table A.4b Effects of ER+ program on agricultural variable outcomes using fixed and random effects

| VARIABLES | Rice Area (decimals) | | Non Rice Area (decimals) | | Rice (kg) | | Non Rice (kg) | |
|---|---|---|---|---|---|---|---|---|
| | (FE) | (RE) | (FE) | (RE) | (FE) | (RE) | (FE) | (RE) |
| Participation in ER+ (yes=1, no=0) | -0.839 | 2.244 | -0.639 | -1.958 | 73.518* | 82.185** | 74.542 | 77.719 |
| | (4.040) | (3.526) | (2.809) | (2.363) | (41.754) | (36.088) | (162.764) | (131.020) |
| Household size | 3.411 | 2.702* | 2.075 | 3.062*** | 39.799 | 42.070*** | 98.606 | 52.328 |
| | (3.993) | (1.475) | (2.776) | (0.892) | (41.271) | (14.693) | (160.885) | (44.636) |
| Number of adults in the household | 13.234*** | 8.784*** | 2.618 | 2.060 | 108.224** | 70.295*** | -5.549 | 50.405 |
| | (4.059) | (2.303) | (2.822) | (1.421) | (41.952) | (23.074) | (163.538) | (72.319) |
| At least a member of the HH works in nonfarm employment (yes=1, no=0) | -16.427*** | -7.665** | -5.165 | -6.663*** | -135.811** | -75.699** | -38.775 | -37.722 |
| | (6.221) | (3.830) | (4.325) | (2.384) | (64.293) | (38.467) | (250.627) | (122.228) |
| Household head is female (yes=1, no=0) | 28.055* | 0.329 | 5.568 | -10.175** | 291.542* | 27.100 | 96.498 | -3.961 |
| | (14.546) | (8.139) | (10.112) | (5.031) | (150.331) | (81.586) | (586.023) | (256.519) |
| Age of the household head | 0.931 | 0.536*** | 0.359 | -0.111 | 13.850** | 4.973*** | 11.473 | 4.015 |
| | (0.583) | (0.182) | (0.406) | (0.109) | (6.029) | (1.809) | (23.503) | (5.381) |
| Years of education of the household head | 1.757 | 3.144*** | 1.710 | 0.055 | 5.263 | 29.245*** | 164.166 | 55.106** |
| | (2.488) | (0.736) | (1.729) | (0.438) | (25.710) | (7.296) | (100.222) | (21.647) |
| Household head is married (yes=1, no=0) | 13.914 | 3.478 | 1.433 | -4.665 | 248.774 | 90.849 | -80.480 | 73.346 |
| | (22.220) | (9.625) | (15.446) | (5.873) | (229.637) | (96.129) | (895.173) | (296.306) |
| At least a member of the HH receives remittances (yes=1, no=0) | 0.730 | 0.612 | 2.428 | 3.509 | -18.175 | -23.493 | 37.147 | 32.270 |
| | (4.430) | (3.569) | (3.080) | (2.323) | (45.786) | (36.269) | (178.485) | (124.461) |
| At least a member of the HH receives other types of private transfers (yes=1, no=0) | -9.826 | -1.499 | -5.305 | -6.881 | -72.216 | -32.285 | 37.269 | 46.076 |
| | (9.858) | (8.279) | (6.853) | (5.437) | (101.877) | (84.329) | (397.139) | (294.098) |
| Total size of own operated land (decimals) | | 0.499*** | | 0.192*** | | 6.317*** | | 1.344 |
| | | (0.080) | | (0.047) | | (0.795) | | (2.319) |
| Distance to the nearest health center (km) | | -0.220 | | 0.315* | | -4.542 | | 14.022 |
| | | (0.314) | | (0.185) | | (3.102) | | (9.042) |
| Distance to the nearest bus stop (km) | | 0.324 | | -0.257 | | 5.610 | | 10.818 |
| | | (0.526) | | (0.309) | | (5.197) | | (15.141) |
| Distance to the nearest main road (km) | | -0.494 | | 0.325 | | -5.506 | | -5.177 |
| | | (0.352) | | (0.207) | | (3.482) | | (10.151) |
| Distance to the nearest bazar (km) | | -0.217 | | 1.311*** | | -7.434 | | 85.922*** |
| | | (0.741) | | (0.436) | | (7.328) | | (21.373) |
| Distance to the nearest agricultural extension office (km) | | -0.749 | | 0.221 | | -7.275 | | -24.348* |
| | | (0.494) | | (0.291) | | (4.885) | | (14.235) |
| Constant | -65.051* | -25.942* | -17.198 | 4.785 | -893.441** | -289.093** | -968.271 | -683.522 |
| | (38.935) | (14.718) | (27.066) | (8.873) | (402.385) | (146.482) | (1,568.580) | (443.432) |
| Observations | 1,370 | 1,370 | 1,370 | 1,370 | 1,370 | 1,370 | 1,370 | 1,370 |
| Number of households | 685 | 685 | 685 | 685 | 685 | 685 | 685 | 685 |
| F statistic | 2.406 | | 0.592 | | 2.718 | | 0.367 | |
| Prob >F | | | 0.821 | | 0.003 | | 0.961 | |
| Chi squared statistic | | 136.4 | | 99.44 | | 175.2 | | 42.63 |
| Prob >F | | 0.000 | | 0.000 | | 0.000 | | 0.000 |

**Note:** Robust standard errors are in parentheses. Coefficient estimates are significant at the * 10 percent level, ** 5 percent level, *** 1 percent level.