Agricultural Credit, Training, and Farm Household Welfare in Bangladesh

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Presented at the Annual BIDS Conference on Development
December 7-10, 2024
Dhaka, Bangladesh

Introduction

- Transformation of subsistence agriculture into commercial agriculture is an indispensable pathway towards economic growth and development for Bangladesh, like other developing countries dependent on smallholder agriculture (von Braun, 1994; Pingali and Rosegrant, 1995; Timmer, 1997; World Bank, 2008).

- Commercial agricultural production is likely to result in welfare gains through the realization of comparative advantages, economies of scale, and dynamic technological, organizational, and institutional change effects that arise from the flow of ideas due to exchange-based interactions (Romer, 1993; 1994).

The NCDP Intervention

- The NCDP intervention was across 61 upazilas of the 16 districts under the Rajshahi and Rangpur divisions to promote the production and marketing of **High-Value Crops**.
- The intervention was multifaceted, ranging from credit, training, credit, and marketing support to technological innovation and agri-business. (Public agencies: BB, DAE, DAM, LGED, RAKUB, and BRRI); Private agencies: (BRAC, Proshika, GKF, and RDRS)
- The project components were (i) farmers' training and extension, (ii) farmer mobilization and credit support, (iii) adaptive research, (iv) marketing support, (v) a pilot agribusiness credit line, and (vi) support for project management.
- This study assesses the impacts of credit, training, and marketing support on farm households.

Farmer Mobilization and Training

- In total, 246,699 beneficiary farm households were mobilized and formed into groups of 15-20 farmers. It may be noted that 57 percent of them were female farmers!
- The farmers' groups were given a series of one-day training sessions on producing and marketing HVCs using the necessary extension services available at the DAE.

Farmer Mobilization and Training-2

- The project financed training in the production and marketing of HVCs through a three-tier training process;

  - technical training for personnel of DAE and selected NGOs;

  - institutional training for farmer group leaders for the production of HVCs provided through four Horticulture Development Training and Development Centres (HTDCs) and other institutions such as the RDA, Bogura;

  - village-based training for farmer group members at the upazila level.

Farmer Mobilization and Training-3

- The DAE imparted repeat training to 326,020 beneficiary farmers (159,750 male and 166,270 female) to make them credit-worthy to the partner NGOs.
- Intensive season-long farmer field school (FFS) training was provided to 30,275 farmers.
- Further, the DAE provided group leadership on crop production, marketing, and gender awareness training to 18,750 and 300 farmers, respectively.

Credit Support to Farmers

- The four NGOs -- Brac, Proshika, GKF, and RDRS -- were entrusted with operations in mutually exclusive geographic areas.
- Many farmers' groups that underwent training later became their clientele in the NCDP credit program.
- Credit was extended to farmers for the production of HVCs at a 12.5% interest rate pa for growing 33 HVCs; later, the support was extended to 6 more HVCs between 2002-03 and 2008-09.

Credit Support to Farmers-2

- A total of 384,523 (167,731 male and 216,792 female) borrowings were completed through the four partner NGOs between 2002-03 and 2008-09.
- During the same period, a total of Tk.3.04 billion (of which Tk. 1.9 billion was distributed cumulatively to female farmers) was disbursed.
  - It implies that each beneficiary farmer received production credit more than once.
  - The average size of the fund was Tk.7,908 per borrowing.
- However, the amount of credit per borrowing is more related to the scale of cultivation of a particular crop by individual farmers and the type of input requirements, technological practices, and crop cycle.

Key Outcomes Assessed

- The following key hypotheses were explored.
- Farm households who received credit and training will have:

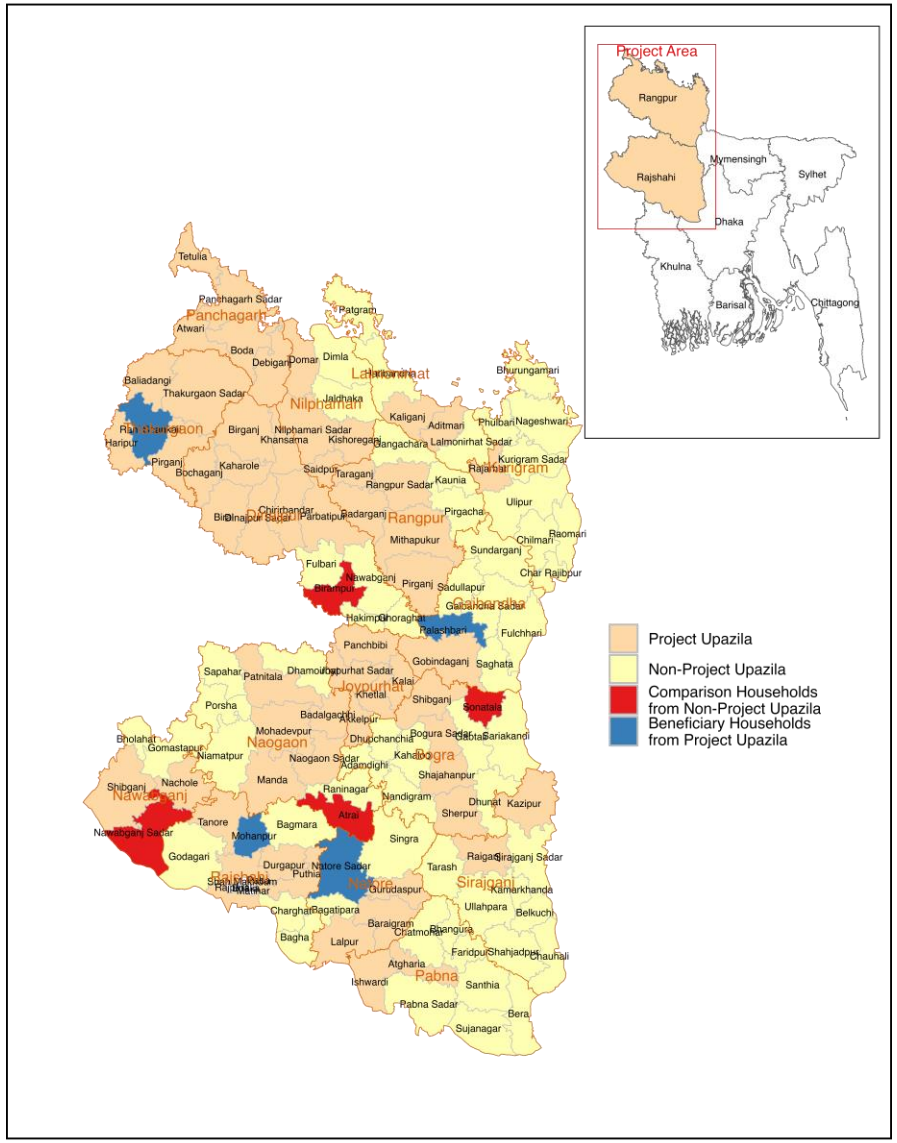
➢(i) increased crop diversification and a shift towards high-value crops, higher market orientation in both the output and input markets and higher net returns from cultivation;

➢ (iii) enhanced gender awareness; and

➢(iii) higher income and more significant welfare improvements

Sampling design

- In the absence of baseline data, a survey was conducted to assess the impact of the NCDP intervention on credit and training.
- For the **treated households**,
  - Four districts randomly selected => one upazila from each of the districts which received intervention => two unions from each of the chosen upazilas => at least 3-4 villages from each of the unions => on average 50 farm households from each of the villages.
- For **comparison households**
  - Four other districts were randomly chosen => one upazila from each of the districts that did not receive intervention => two unions from each of the selected upazilas => at least 5-6 villages from each of the unions were chosen => on average, 50 farm households were selected from each of the villages.
- Hence, **800 treated** and **1200 comparison households** were selected from the eight upazilas.



Assessment Methodology

- The present evaluation uses the propensity score matching method.
- The participation model was estimated using a probit model with a set of covariates that included demographic characteristics of the household head, economic dependency of the household, land characteristics such as total owned agricultural land elevation, fertility, household access to electricity, safe drinking water, hygienic latrine, etc.
- The “balancing properties” of the data were assessed by testing that treatment and comparison observations had the same distribution (mean) of propensity scores and of control variables within groupings (roughly quantiles) of the propensity score. All impact results presented in this study are based on specifications that passed the balancing tests.
- The “common support” was applied to improve the quality of the match by ensuring that matches are formed only where the distribution of the density of the propensity scores overlaps between treatment and comparison observations.

Impacts on Cropping Related Issues (ATT)

Cropping Related Issues	Coefficient	Std. Error	z
Cropping Intensity of Farm Households	0.074**	0.028	2.65
Crop Diversification of Farm Households	0.004	0.009	0.37
Percentage of Acreage under HVCs	3.509***	1.236	2.84
Aggregate Net Return of Crop Production	14088.48***	3881.849	3.63
Output Market Orientation	0.036***	0.006	5.43
Output Market Participation	0.108***	0.016	6.63
Input Market Participation	-0.0004	0.008	-0.04

- While cropping intensity increased, crop diversification hardly changed. Part of the failures has been redeemed by successfully diverting farmers towards cultivating the HVCs, which entailed high aggregate net crop production returns.
- The farm households appeared to have become more market-oriented, which might, in turn, have led to greater participation in the crop output markets.

Impacts on Employment (ATT)

Employment Indicators	Coefficient	Std. Error	z
Total Employment (Hours/HH)	26.003**	10.018	2.6
Total Agricultural Employment (Days/HH)	-8.366	8.137	-1.03
Hired Agricultural Employment (Days/HH)	-2.095	4.185	-0.50
Hired Agricultural Employment (Hired as % of Total Agricultural Employment)	0.011	0.015	-0.72

Program participant households have experienced significantly more employment than their comparable counterparts.
However, the increase did not originate from agricultural operations, as neither total agricultural employment nor hired agricultural employment increased through the intervention.

Impacts on Women Empowerment (ATT)

Women Empowerment Indicators	Coefficient	Std. Error	z
Ownership of Assets by Female Members (Taka/HH)	1058.055	970.963	1.09
Women's Empowerment	0.9795***	0.358	2.73

Although ownership of assets by female members in the household has not increased, they have exerted important voices in the agricultural decision-making process.

Impacts on Household Livelihoods (ATT)

Livelihood Indicators	Coefficient	Std. Error	z
Value of Houses (Taka/HH)	6812.346	5698.283	1.2
Value of Livestock and Poultry (Taka/HH)	-3734.168**	1913.633	-1.95
Value of Household Effects (Taka/HH)	2539.302	1612.709	1.57
Per Capita Household Income (Taka/Year)	1437.514	5068.945	0.28
Per Capita Expenditures on Food Items (Taka/Week)	134.158***	42.09	3.19
Per Capita Expenditures on Non-Food Items (Taka/Month)	7715.699**	3571.48	2.16

The impact estimates suggest that the program allowed its beneficiaries to increase their expenditures on food and non-food items. No significant impact on per capita annual income was found.

Impacts on Food Security and Poverty (ATT)

Food Security and Poverty Indicators	Coefficient	Std. Error	z
Provision of Sufficient Food (Months)	0.236	0.237	0.99
Lower Poverty Headcount	-0.032	0.024	-1.32
Upper Poverty Headcount	-0.028	0.026	-1.04
Lower Poverty Gap	0.001	0.006	0.11
Upper Poverty Gap	-0.002	0.007	-0.30
Lower Square Poverty Gap	0.001	0.002	0.37
Upper Square Poverty Gap	0.001	0.003	0.21

No significant impact on food security and poverty was found.

Conclusions

- In a multi-faceted intervention implemented through too many agencies, such as the NCDP, several components' negative/insignificant impacts are often masked by the **positive effects** of one or two components. This type of multi-faceted intervention should be avoided as far as possible.
- The concept of rigorous impact evaluation should be outlined at the design phase of the intervention so that the implementing agencies are well aware of the future data requirements. This is necessary to adopt a rigorous impact assessment method.

Thank You for Your Attention!