The Effect of Price Risk and Market Participation on the Demand for Nutrition Among Agricultural Households in Bangladesh*

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THE EFFECT OF PRICE RISK AND MARKET PARTICIPATION ON THE DEMAND FOR NUTRITION AMONG AGRICULTURAL HOUSEHOLDS IN BANGLADESH

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Introduction

Despite technological advances in agriculture, 795 million people globally are classified as undernourished[2]. Thus, many developing countries seek to better understand the linkages between agricultural production and household nutrition. This study explores the role of market participation on smallholder farmers' decisions to produce and consume nutrient-rich food items in Bangladesh.

Objective

To identify the extent to which the decisions to sell farm products and purchase food at the market versus consume food produced at home affects household dietary diversity in rural Bangladesh.

Data

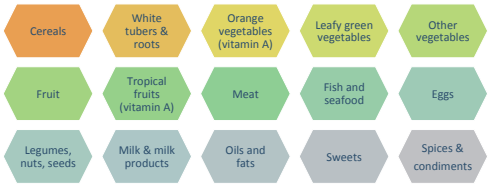
We surveyed households in two districts of rural Bangladesh, Borguna and Mymensingh, (N = 1,149) to elicit information about agricultural production, market participation, and household dietary diversity.

Empirical Analysis

Our dependent variables are based on 15 food groups classified by nutrient content according to FAO[4].

- **Household dietary diversity score (HDDS):** the number of food groups [0,15] consumed in the household within the last 24 hours.
  - HDDS only includes households where the primary meal preparer responded to the survey.
- **Farm diversity score:** the number of food groups [0,13] produced by the household in the last year.

FAO Food Groups

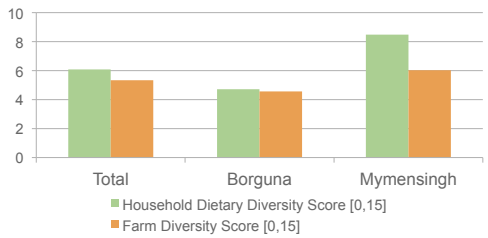


The empirical model uses two OLS regressions, defined, for each household *i*, as:

$$D_i = \alpha_0 + \alpha_1 M_i + \alpha_2 U_i + X_i' \alpha_4 + \varepsilon_i$$

where D_i is the farm diversity score or HDDS in the model for household production or consumption, respectively. M_i indicates whether household *i* participates in markets for buying or selling food products. U_i is the district and X_i' is a vector of farm and household characteristics.

Differences in Production Diversity and Consumption Diversity by District



Results

*Statistical significance denoted by *** 0.01, ** 0.05, *0.10*

Farm Diversity Score Regression Results

Variable	All	Borguna	Mymensingh
District (Mymensingh = 1)	1.33***		
Religion (Muslim = 1)	-0.33	-0.49**	0.56
Household food insecurity access score	-0.06***	-0.03**	-0.14***
Household monthly income	0.00	0.00	0.00
Male-headed household	-0.19	-0.12	-0.12
Household head education primary school	-0.01	-0.14	0.08
Household head education junior secondary school	0.26	-0.03	0.39**
Household head education secondary school	0.17***	0.20	0.20
Household head education SSC pass	0.56**	-0.94	0.76***
Household head education postsecondary school	0.25	1.95*	0.30
Age of household head	0.01***	0.00	0.01**
Household size	0.11***	0.14***	0.10**
Poverty score	0.01***	0.02***	0.00
Total ag land (decimals)	0.00***	0.00***	0.00***
Buy food at the market	0.09	-0.08	0.34*
Sell food at the market	0.95***	0.91***	1.04***
N	1,124	527	597
Adj. R^2	0.42	0.22	0.23

Household Dietary Diversity Score (HDDS) Regression Results

Variable	All	Borguna	Mymensingh
District (Mymensingh = 1)	3.93***		
Religion (Muslim = 1)	0.00	0.06	-0.63
Household food insecurity access score	-0.08***	-0.10***	0.00
Household monthly income	0.00**	0.00	-0.05
Male-headed household	0.06	0.11	-0.81
Household head education primary school	-0.50**	-0.55**	0.07
Household head education junior secondary school	-0.15	-1.05**	0.71
Household head education secondary school	-0.26	0.00	0.01
Household head education SSC pass	-0.23	-0.06	0.12
Household head education postsecondary school	0.30	-1.34	0.60
Age of household head	- 0.01	0.00	-0.02
Household size	-0.14**	-0.20**	-0.05
Poverty score	-0.01*	-0.03**	0.00
Total ag land (decimals)	0.00	0.00	0.00**
Farm diversity score	0.38***	0.39***	0.34***
Buy food at the market	1.59***	2.25***	0.14
Sell food at the market	-0.53***	-0.72***	-0.50*
N	740	472	268
Adj. R^2	0.43	0.25	0.08

Discussion

The results show market participation influences decisions surrounding the production and consumption of nutrients.

- **Seller's market:** Participation in markets for selling agricultural products improves farm diversity but decreases dietary diversity.
  - There may be incentive for farmers to sell more nutritious and expensive food items (fruits and vegetables) in order to purchase rice from the market.
- **Buyer's market:** Engaging in the market for buying food improves dietary diversity.
  - Households with access to buyer's markets have a wider variety of food to choose from.
- **Price risk:** Incentive to participate in either market is likely driven by price volatility and transaction costs.

Consumption and production patterns vary by district. Farm and dietary diversity are higher among households from northern Bangladesh (Mymensingh), where the growing conditions are more favorable in terms of climate, soil fertility, soil salinity, and access to agricultural extension. Further research should explore the extent to which geographic location impacts nutrition due to market access and price differentials in agricultural markets.

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