



**AgEcon** SEARCH  
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

*The World's Largest Open Access Agricultural & Applied Economics Digital Library*

**This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.**

**Help ensure our sustainability.**

Give to AgEcon Search

AgEcon Search  
<http://ageconsearch.umn.edu>  
[aesearch@umn.edu](mailto:aesearch@umn.edu)

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*



# **Analysing the Impact of Household Health and Economic shocks on Food Security and Dietary Diversity: Evidence from Rural Bangladesh**

Jesmin A Rupa, Wendy J Umberger and Sharmina Ahmed

Contributed presentation at the 60th AARES Annual Conference,  
Canberra, ACT, 2-5 February 2016

*Copyright 2016 by Author(s). All rights reserved. Readers may make verbatim copies of this document for non-commercial purposes by any means, provided that this copyright notice appears on all such copies.*



THE UNIVERSITY  
of ADELAIDE



# Analysing the Impact of Household Health and Economic shocks on Food Security and Dietary Diversity: Evidence from Rural Bangladesh

Jesmin A Rupa, Wendy J Umberger and Sharmina Ahmed

Global Food Studies  
The University of Adelaide  
AARES Conference 2016

4 February 2016

# Research Motivation

- Poor farmers in developing countries have little to no safety net
  - => Vulnerable to shocks
  
- Poor farmers in developing countries suffer from a poverty trap
  - => low income prevents them from meeting healthy daily food requirements (FAO 1996)
  - ⇒ food insecurity and lack of dietary diversity
  - ⇒ malnutrition

## Research Question

Do adverse health and economic shocks impact food security and dietary diversity among rural farming households?

## Objective of the study

Severity of food insecurity and dietary diversity in response to different health and economic shocks

## Bangladesh

- 60 million people classified as “food insecure” (World Food Program 2015)
- 75% of population live in rural areas (BBS, 2011a)
- Rural areas: Highest poverty rate, 36% (IFAD 2014)
- Many rural households: < \$1.25 a day (Ahmed et al. 2013)
- Half of the rural children are chronically malnourished

# Empirical Specification

- We estimate the following Equation:

$$\mathbf{f} = \mathbf{X}\beta_1 + \mathbf{h}\beta_2 + \mathbf{C}\beta_3 + \alpha_v + e$$

$\mathbf{f}$  = a vector of food security outcomes at current period (Food consumption Score (FCS), FCS\_profile)

$\mathbf{X}$  = a vector of household level characteristics at current period

$\mathbf{h}$  = a vector of health shocks at previous period (effect of the shock is ongoing)

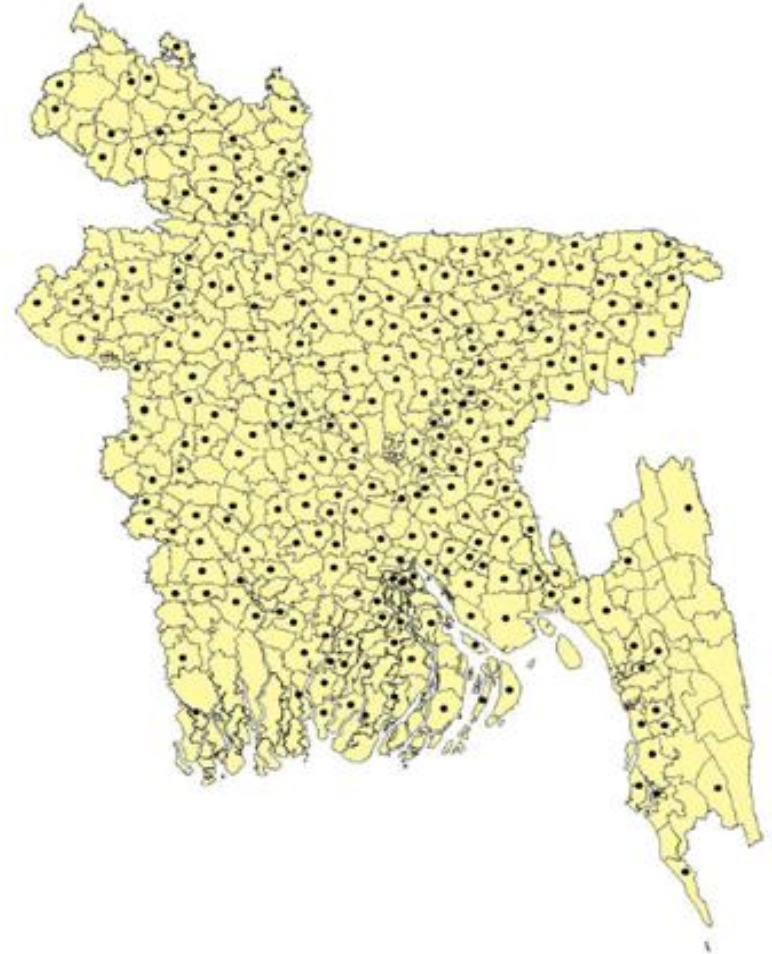
$\mathbf{C}$  = a vector of economic shocks at previous period (effect of the shock is ongoing)

$\alpha_v$  = village-level fixed effects



# DATA

- Bangladesh Integrated Household Survey, 2011- 2012 collected by IFPRI
- Cross Sectional study
- Sample size - 1129 farming households
- Number of villages – 292
- Number of observations – 2261
- Data include household level characteristics



## Outcome Variable

- Food Consumption Score (FCS): Composite score based on...
  - dietary diversity
  - food frequency
  - relative nutritional importance of the various food groups
  - 7-day recall and based on 8 weighted food groups(WFP 2008)

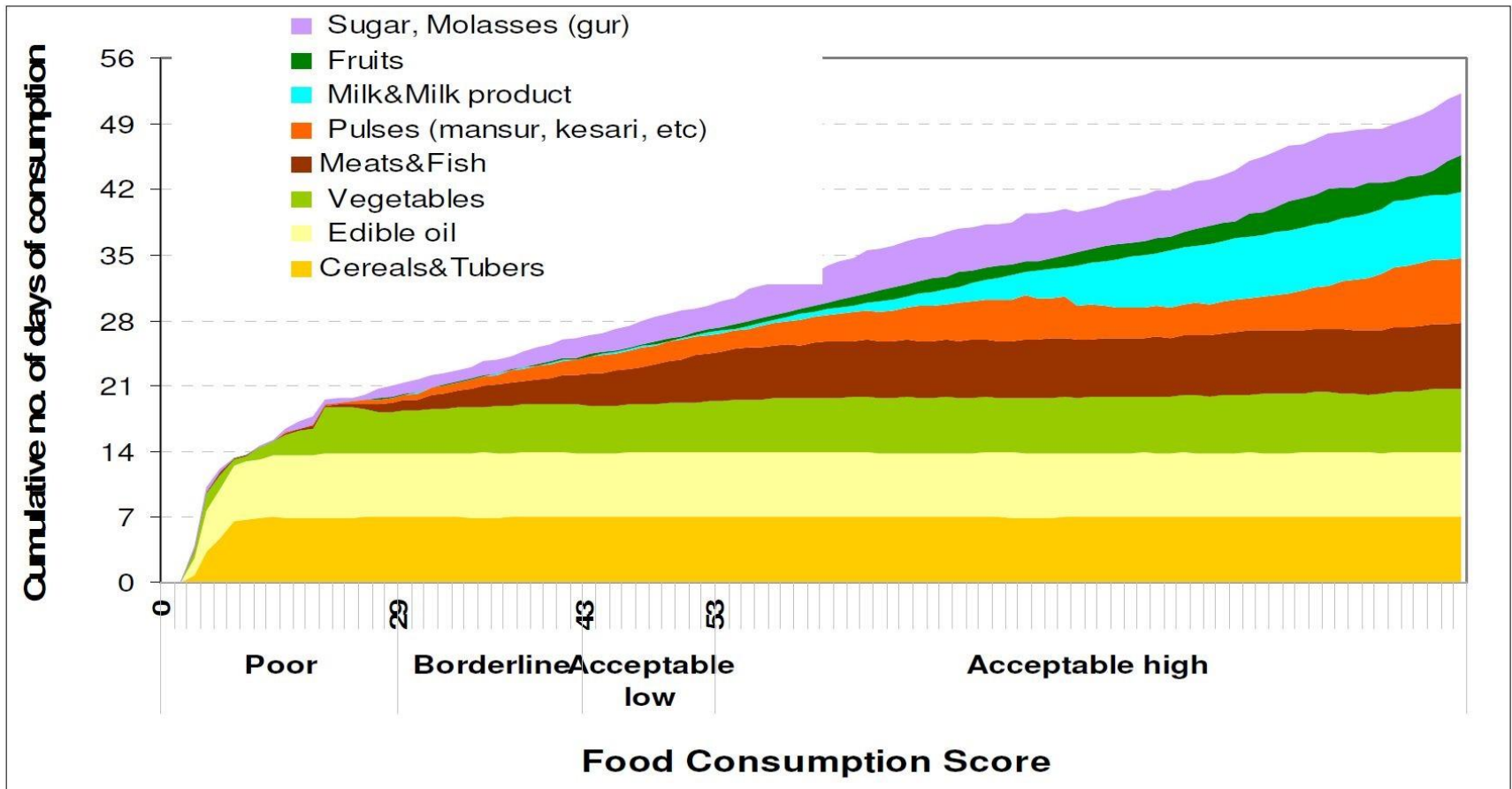
# Outcome Variable

## Why using FCS?

- Reflects food frequency and quality of food available to household
- Provides more complete picture of food consumption
- Appropriate for in-depth food security assessments (FAO and WFP 2012)

# Outcome Variable: FCS

## Diet Composition by Food Consumption Score in Bangladesh



# Independent Variables

- Health shock variables - *death of main earner*  
*Binary variables (Yes=1,0 otherwise)* - *loss of income due to illness*  
- *medical expenses*
- Economic shock variables - *crop damage and loss*  
*Binary variables (Yes=1,0 otherwise)* - *loss of livestock*  
- *cut off NGO assistance*
- Demographic Variables
  - *owned cultivable land*
  - *Age of Household head*
  - *Age squared of household head*
  - *highest level of education by members*
  - *household size*
  - *female Headed household*
  - *number of foods produced by household*
  - *number of foods from food assistance*
  - *number of bullock owned*
  - *access to electricity(=1,0 otherwise)*

# Model Specification

## Village-level Fixed Effects:

- To capture all unobserved recent changes affecting the villages such as agricultural shocks due to the attack of insects etc.

## Hypothesis:

- Health and Economic shocks negatively affect FCS

# Results and Findings

Table 1: Regression Results for Estimation of FCS for farmers in rural Bangladesh

<i>Variables</i>	FCS
<i>Health Shocks:</i>	Village-level Fixed Effects
Death of main earner	(-) and sig. (1% level)
Loss of income due to illness	(-) and sig. (1% level)
Medical expenses	(-) and sig. (1% level)
<i>Economic Shocks:</i>	
Crop damage and loss	(-) and Not sig.
Loss of livestock	(-) and sig. (10% level)
Cut-off NGO assistance	(-) and sig. (10% level)

# Results and Findings

Table 1(Cont.): Regression Results for Estimation of FCS for farmers in rural Bangladesh

<i>Control Variables</i>	FCS
Household size	(+) and sig. (1% level)
Owned cultivable land	(+) and sig. (10% level)
Age of Household head	(-) and sig. (1% level)
Highest level of education by household member	(+) and sig. (1% level)
Female Headed household	(-) and Not sig.
Number of bullock own	(+) and sig. (10% level)
Access to electricity	(+) and sig. (5% level)
Number of foods produced by household at home	(+) and sig. (1% level)
Number of foods from food assistance program	(+) and sig. (5% level)



## Key messages

- Health and economic shocks may negatively affect food security and dietary diversity of farming Households
- Farming households seem more vulnerable to health shocks than economic shocks
- Greater food subsistence leads to greater food security and dietary diversity

**Thank you! Questions?**