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Don't Forget about the Children – Latent Food Insecurity in Rural Cambodia

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Introduction

Halving food insecurity was one major aim of the Millennium Development Goals (MDGs), which, according the FAO (2015), has already been met regarding undernourishment in the overall population. In Cambodia the FAO estimates that currently 2.2 million people still suffer from undernourishment accounting for 14.2% of the population. In line with these encouraging developments we find that common indicators such as the Food Consumption Score (FCS) or the Coping Strategies Index (CSI) do not reveal great problems with food insecurity in rural Cambodia. However, anthropometric data for children under five – measured with weight-to-height ratios – indicate that malnutrition, stunting, and nutrition deficiencies are still a common phenomenon. This finding is somewhat puzzling. The paper therefore aims to explore why these food security indicators result in different food security outcomes.

Data Set and Methods

The data set used is part of a two period household panel survey collected in May 2013 and 2014 in the Cambodian province of Stung Treng. The original survey from 2013 contained 600 households which were sampled in a two-stage sampling procedure. In the first step, 30 villages were selected from the list of all 129 rural villages in the province with probabilities proportional to their size measured as the number of households. In the second step, 20 households were randomly chosen from each village's household list. This procedure results in equal probability for each household in the province to be part of the sample and it is based on the procedures described by Hardeweg et al. (2013) and the United Nations (2005). Due to attrition 11 households were dropped from the sample in 2014. The anthropometric measures were calculated based on the 2014 data since they were only introduced in the second wave.
The survey consists of two modules: (i) a household questionnaire covering household and individual level data on income and consumption components, agricultural production, assets, health, food security, education, weight and height; and (ii) a village level questionnaire capturing village level characteristics such as employment opportunities, population size, and access to general services (education, banking, etc.). Responses to the former were given by the household head and/or spouse and covered the reference period of one year, while the latter was answered by the village head or his deputy.

The household survey was administered in Khmer by a mixed-gender team of 15 enumerators. All of them had previous experience with socio-economic household surveys and participated in a one week training including field-days and role plays before starting the survey. Two thirds of the team were from the capital Phnom Penh, the rest were recruited in Stung Treng.

Following Maxwell et al. (2014) the most commonly used food security indicators can be categorized into the following three groups: (i) dietary diversity and food frequency – including the Food Consumption Score (FCS), or the Household Dietary Diversity Score (HDDS); (ii) consumption behavior – such as the Coping Strategies Index (CSR) and the reduced Coping Strategies Index (rCSR); and (iii) experimental measures – containing the Household Food Insecurity Access Scale (HFIAS) and the Household Hunger Scale (HHS). In addition to these indicators a number of other food-related measures frequently appear in the literature including the FAO indicator of undernourishment, household survey consumption based measures, and anthropometrics (de Haen et al. 2011). In this paper we are mainly concerned with the latent undernutrition in children which are typically not visible in household level food security measures (de Haen et al. 2011). Yet, to show the gaps and give an overview of the different dimensions picked up by individual indicators this paper first compares the food security of households by using the major food security indicators following Maxwell et al. (2014) and anthropometrics in children under five. Second, the regression analysis focusses on the FCS and the weight-for-age measure for children under five.

In order to explore the relationship between household characteristics and both the FCS and the weight-for-age measure we utilize a simple ordinary least squares (OLS) regression of the following form:

$$Indicator_i = \beta_0 + \beta_1 H_1 + \beta_2 W_i + \beta_3 V_i + \beta_4 D_i + \varepsilon_i,$$

where i identifies the household or individual child respectively. H is a vector of household head characteristics including gender, years of education, age, and ethnicity. In addition, W is a vector of household wealth indicators such as assets and major income generating activities. V is a village level measure of market access measured by the distance in minutes needed to reach the next town. Finally, geographic dummies (D) for the different municipal areas, Sesan, Siem Bouk, and Siem Pang, are included to control for regional differences against the base group of households situated in the municipality of Stung Treng.

Results and Discussion

The basic analysis of classifying households into major food security indicators shows that the different indicators capture different aspects of food security (see table 1). While the large majority of households appears to be food secure according to the FCS and the HHS, the HFIAS and the CSI classify only 0.34 to 3.26 percent of the households as food secure. These findings are very much in line with findings from Maxwell et al. (2014) regarding food insecurity indicators in Ethiopia. This difference can be partly explained by the fact that the FCS and the HHS simply consider the number and frequency of food groups consumed within 7 days, while the CSI accounts for behaviour in the presence of uncertainty and the HIFAS and HHS incorporate a combination of behavioural and psychological dimension (Coates 2013, Maxwell et al. 2014).

Table 1: Classification According to major food security indicators

Indicator	% of households classified as		
	food secure	mildly/moderately food insecure	severely food insecure
FCS	86.3	12.16	1.54
HFIAS	0.34	26.03	73.46
HHS	98.28	1.54	0.17
CSI	3.26	96.05	0.69
rCSI	60.03	39.45	0.51

Source: Own calculations

Table 2: Malnutrition in children under 5, in %

		total	male	female
stunting	**N**	251	127	124
normal (%)	114	45.42	40.94	50.00
moderate (%)	55	21.91	20.47	23.39
severe (%)	82	32.67	38.58	26.61
underweight	**N**	259	130	129
normal (%)	161	62.16	61.54	62.79
moderate (%)	58	22.39	23.85	20.93
severe (%)	40	15.44	14.62	16.28
wasting	**N**	250	127	123
normal (%)	193	77.20	79.53	74.80
wasting (%)	40	16.00	14.17	17.89
severe wasting (%)	17	6.80	6.30	7.32

Source: Own calculations

When adding the estimates of the anthropometrics for children under five, displayed in table 2, it becomes evident that stunting, underweight and wasting are still wide-spread. While stunting is more prominent amongst boys, underweight and wasting appears more frequently for girls. This could hint at a potential gender bias regarding the intra-household food allocation.

Table 3: OLS Results of Food Security and Malnutrition

	(1)	(2)
VARIABLES	FCS_av	weight-for-age
hhsize	0.448*	-0.0589
education_head	0.355**	0.00983
party_head	-2.780***	0.332*
age_head	0.0792**	0.00567
minutes_town	-0.0301***	-0.00143
ln_asset_pc	1.056***	0.0330
TLU_consumed_pc	-18.77	-3.961
credrat_1	-0.161**	0.000704
ln_land_pc	0.210	-0.159**
crop_divers	-0.293	0.0713
d_agri_wage	-4.007***	-0.0756
days_fish	0.0255***	-0.00118
days_hunt	-0.0413	0.00315
days_log	-0.00923*	-0.000246
d_Sesan	-0.669	0.860***
d_Siem_Bouk	4.699***	0.776***
d_Siem_Pang	-6.634***	-0.0769
risk_head	0.511***	-0.0150
Constant	47.58***	-2.289***
Observations	574	253
R-squared	0.310	0.178

Note: Robust standard errors are used, significance levels: *** p<0.01, ** p<0.05, * p<0.1; further controls: Female_headship, ethnicity, crop diversification, TLU, self_employment, access to toilet and tap water, dummy Stung Treng, dummy poverty_line

The preliminary regression results, shown in table 3, support our claim that the correlations between the FCS and household and village characteristics are substantially different than the correlations between anthropometrics and these characteristics. While household head characteristics such as education and age are positively associated with the household level food security measured by the FCS they seem to have no effect on the weight-for-height ratio. The wealth indicators show that assets and fishing activities have a positive influence on the FCS ratio while they are not significant for the anthropometrics. Interestingly, the political party dummy has a positive effect on the weight-for-height ratio, while it is negatively correlated to the overall food security status of the household.

Conclusions and Outlook

Our results confirm that according to the FCS, which is widely used for assessing households' food insecurity, households in Stung Treng appear to be able to meet their basic food security needs. However, the CSI and HIFAS point towards more food insecurity among households with respect to perception and coping measures. Children below five are found to suffer from stunting and malnutrition. Thus, there seems to be latent food insecurity for children probably based on intra household resource allocation issues. Further, by quantitatively evaluating what households themselves define as food secure, we find that people are not aware of malnutrition and deficiency issues since for them having enough rice means that they are food secure. Thus, due to its cultural dimension it will be difficult to change people's diet and food consumption pattern. In order to improve the situation it is important that policy makers are aware of the latent food insecurity, especially for children, in rural Cambodia.

OLS regression analysis confirms that household food security levels seem to be different from individual food security levels, at least for children under five. While the FCS is positively correlated with household head education, age and household wealth indicators, the weight-for-age measure does not seem to be correlated. Thus, children's food security status appears to depend on a different set of characteristics.

In order to explore the factors that influence malnutrition in children we aim to further disentangle the effects by including children as well as mother-specific characteristics. For comparability reasons the analysis of the FCS should be limited to those households who have children under five.

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