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Does time allocation matter for the Women's Empowerment in Agriculture? Insights of the Women's Empowerment in Agriculture Index WEAI

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Motivation

In rural areas of the world, besides the participation in the typical activities of agricultural production, women are in charge of child care, the preparation of food, the collection of water and fuel needed for the household.

The high work load that women experience is important to be considered as a determinant of Empowerment. The Women's Empowerment in Agriculture Index (WEAI) includes as an innovative feature a Time Dimension in its calculation. It is necessary to assess the calculation of the time dimension in the WEAI, since policy makers and researchers would rely on the accuracy of the score to take decision that would impact the lack of empowerment.



Objective

- ✓ To evaluate the significance that the time dimension has in the calculation of the WEAI using data originated in Bangladesh and Ghana.

Background

- ✓ We use the concept of empowerment from Sen's definition of *agency* "as what a person is free to do and achieve in pursuit of whatever goals or values he or she regards as important" (Sen 1985). Thus, women empowerment is conceived as "the expansion of women's agency" (Ibrahim & Alkire, 2007).
- ✓ There have been multiple approaches to measure women empowerment, these can be argued not to be good proxies of the women empowerment in agriculture because they don't provide a direct measure of inequality between genders, and do not allow for heterogeneities between different sectorial groups.
- ✓ There is need to create a women's empowerment index that is a survey based that focus on daily women's activities. The WEAI has claimed to be able to measure empowerment in agriculture using ten dimensions. One of those, time allocation and time satisfaction is the most innovative of all indicators. Thus, the index should be able to track and identify key areas in which women (and men) lack empowerment, and the time allocation can be foreseen to impact women's empowerment.

Women's Empowerment in Agriculture (WEAI)

The WEAI is constructed using two weighted sub-indexes (Alkire et al. 2013):

$$EAI = \alpha * (5DE) + (1 - \alpha) * (GPI) \quad \alpha = 0.9$$

(The Five Domain Empowerment Index (5DE), and The Gender Parity Index (GPI) range from zero to one. The higher the values the greater the level of empowerment.

The 5DE calculates an empowerment score for each person in the sample. The score is a summation of the level of achievement in ten indicators grouped in five domains (Table 1). Questions about the indicators were developed with closed-ended scaled qualitative responses.

TABLE 1. THE FIVE DOMAINS OF EMPOWERMENT IN THE WEAI

Domain	Indicator	Weight
Production decision-making	Input in productive decisions	I/10
	Autonomy in production	I/10
Access to productive resources	Ownership of assets	I/15
	Purchase, sale, or transfer of assets	I/15
Control over use of income	Access to and decisions on credit	I/15
	Control over use of income	I/5
Community leadership	Group member	I/10
	Speaking in public	I/10
Time allocation	Workload	I/10
	Leisure	I/10

Source: Alkire et al. (2013).

5DE

Indicates either being or not "empowerment". It measures the magnitude of either dimension, and can be calculated across the entire sample of men and women who completed the survey.

GPI

The GPI index is used to measure the relative difference between the 5DE measure of a man and woman in the same household, it is formulated as:

$$GPI = 1 - H_w (R_p)$$

H_w = % of women without gender parity

R_p = average empowerment gap between women compared with men in their HH

Data

Comprehensive database constructed from a population-based survey collected in Northern Ghana, and Bangladesh in 2012

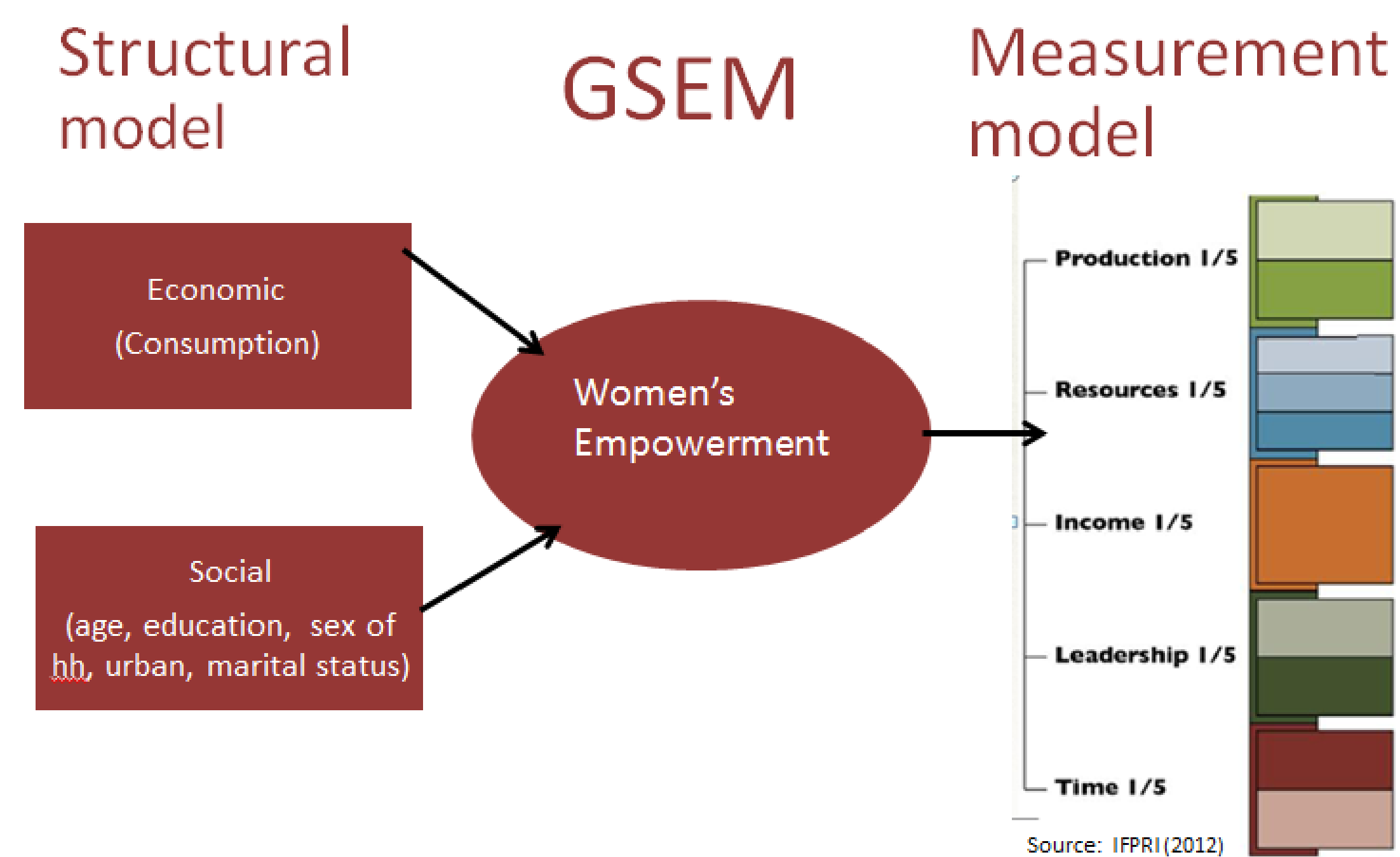
Data Summary for Ghana

- ✓ 2,316 females or 2,556 households

Data Summary for Bangladesh

- ✓ 6503 females responded the survey

MIMIC APPROACH



The measurement model deals with the latent variables and their indicators. There are straight arrows from the latent variables to their respective indicators, and from the error and disturbance terms to their respective variables. The measurement model is evaluated using fit indices or measures.

The structural model is the set of exogenous and endogenous variables in the model, together with the direct effects (straight arrows) connecting them, and the disturbance and error terms for these variables (reflecting the effects of unmeasured variables not in the model)

Model

The system of equations would specify the relationship between :

Y^* Unobservable latent variable (Women's empowerment)

Y^0 Vector of endogenous variables (Indicators)

X Vector of exogenous variables

The structure of the model:

$$Y^* = \alpha' X + \varepsilon \quad (1)$$

Y^* = scalar unobserved latent variable

α' = vector of parameters to be estimated

X = vector of observed exogenous causal variables

ε = error term

$$Y = \beta Y^* + \varsigma \quad (2)$$

Y = vector of observed endogenous variable

β = vector of parameters to be estimated (*factor loadings*)

ς = mutually independent error term

The Mimic model is a reduced form of (1) and (2), and is represented by:

$$Y = \pi' X + v \quad (3)$$

$\pi = \alpha \beta'$ vector of parameters to be estimated

X = vector of observed exogenous causal variables

v = error term

Regression Results

The finding from the system of equations from the Bangladesh and Ghana data are as follows:

	Bangladesh		Ghana	
	Coefficient	Std. Error	Coefficient	Std. Error
Structural Model				
Age (in years)	.645***	.000	-1.15***	0.002
Literacy	.002	.005	0.324***	0.062
Marital Status	.012	.008	0.396**	0.117
Measurement Model				
Input in Productive Decisions	2.351***	.435	1***	
Autonomy in Production	-.118***	.0376	-0.732***	0.132
Ownership in assets	-.0836*	.043	2.248***	0.350
Purchase, sale or transfer of assets	1.109***	.207	2.705***	0.443
Access to and decisions on credit	.457***	.094	0.407***	0.081
Control over the use of income	1.880***	.348	0.933***	0.129
Group member	.035***	.008	0.533***	0.099
Speak in public	1.673***	.363	0.215***	0.072
Workload	-.134***	.038	-0.053	0.060
Leisure Time	1.0		-0.106	0.086

** , *** denotes significance of standardized coefficients at the five percent and one percent levels, respectively.

Key Findings

- ✓ Overall after estimating the system of equation from the MIMIC approach, there is statistical evidence that the time satisfaction and time allocation included in the WEAI index does not explain the latent variable Women's Empowerment.
- ✓ Eight of the ten indicators utilized in the WEAI explain the latent variable Women's Empowerment
- ✓ Age is a statistically significant parameter of women's empowerment according to the model. For Bangladesh the coefficient is positive while for Ghana it is negative
- ✓ In Ghana being married, and not having access to electricity will decrease the probabilities of a woman to be empowered
- ✓ In Ghana literacy will increase the likelihood of a female to be empowered.



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