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 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.

Women’s Empowerment in Agriculture (WEAI)

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

\[ EAI = a \times (SDE) + (1 - a) \times (GPI) \]

\[ a = 0.9 \]

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

The SDE 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](image)

<table>
<thead>
<tr>
<th>Domain</th>
<th>Indicator</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Productive Living</td>
<td>Female farmers share income decisions</td>
<td>0.25</td>
</tr>
<tr>
<td>Access to Resources</td>
<td>Women have decision making power on family</td>
<td>0.16</td>
</tr>
<tr>
<td>Control of Women</td>
<td>Women have voice in decisions on family</td>
<td>0.21</td>
</tr>
<tr>
<td>Income</td>
<td>Women can save for themselves</td>
<td>0.15</td>
</tr>
<tr>
<td>Leadership</td>
<td>Women are encouraged to participate in leadership roles</td>
<td>0.13</td>
</tr>
</tbody>
</table>

SDE 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 SDE measure of a man and woman in the same household. It is formulated as:

\[ GPI = 1 - H_p \times R_p \]

where:

- \( H_p \) = % of women without gender parity
- \( R_p \) = average empowerment gap between women compared with men in their HH

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

Data

* Data Summary for Ghana
  - 2,316 females or 2,556 households
  - 6,503 females responded the survey

* Data Summary for Bangladesh
  - 2,316 females or 2,556 households
  - 6,503 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)
- \( Y \): Vector of endogenous variables (Indicators)
- \( X \): Vector of exogenous variables

The structure of the model:

\[ Y^* = \alpha X + \varepsilon \]

where:

- \( \varepsilon \) = scalar unobserved latent variable
- \( \alpha \) = vector of parameters to be estimated
- \( X \) = vector of observed exogenous causal variables
- \( \varepsilon \) = error term

\[ Y = \beta Y^* + \zeta \]

where:

- \( \zeta \) = vector of observed endogenous variable
- \( \beta \) = vector of parameters to be estimated (factor loadings)
- \( \zeta \) = mutually independent error term

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

\[ Y = \pi' X + u \]

Regression Results

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

- **Bengaline**: Coefficient Std. Error
- **Others**: Coefficient Std. Error

<table>
<thead>
<tr>
<th>Key Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
</tr>
<tr>
<td>Eight of the ten indicators utilized in the WEAI explain the latent variable Women’s Empowerment.</td>
</tr>
<tr>
<td>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</td>
</tr>
<tr>
<td>In Ghana being married, and not having access to electricity will decrease the probability of a woman to be empowered</td>
</tr>
<tr>
<td>In Ghana literacy will increase the likelihood of a female to be empowered.</td>
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</table>

CONTACT INFORMATION

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