Women's Empowerment in Agriculture Index (WEAI) in the SADA Region, Ghana

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Outline

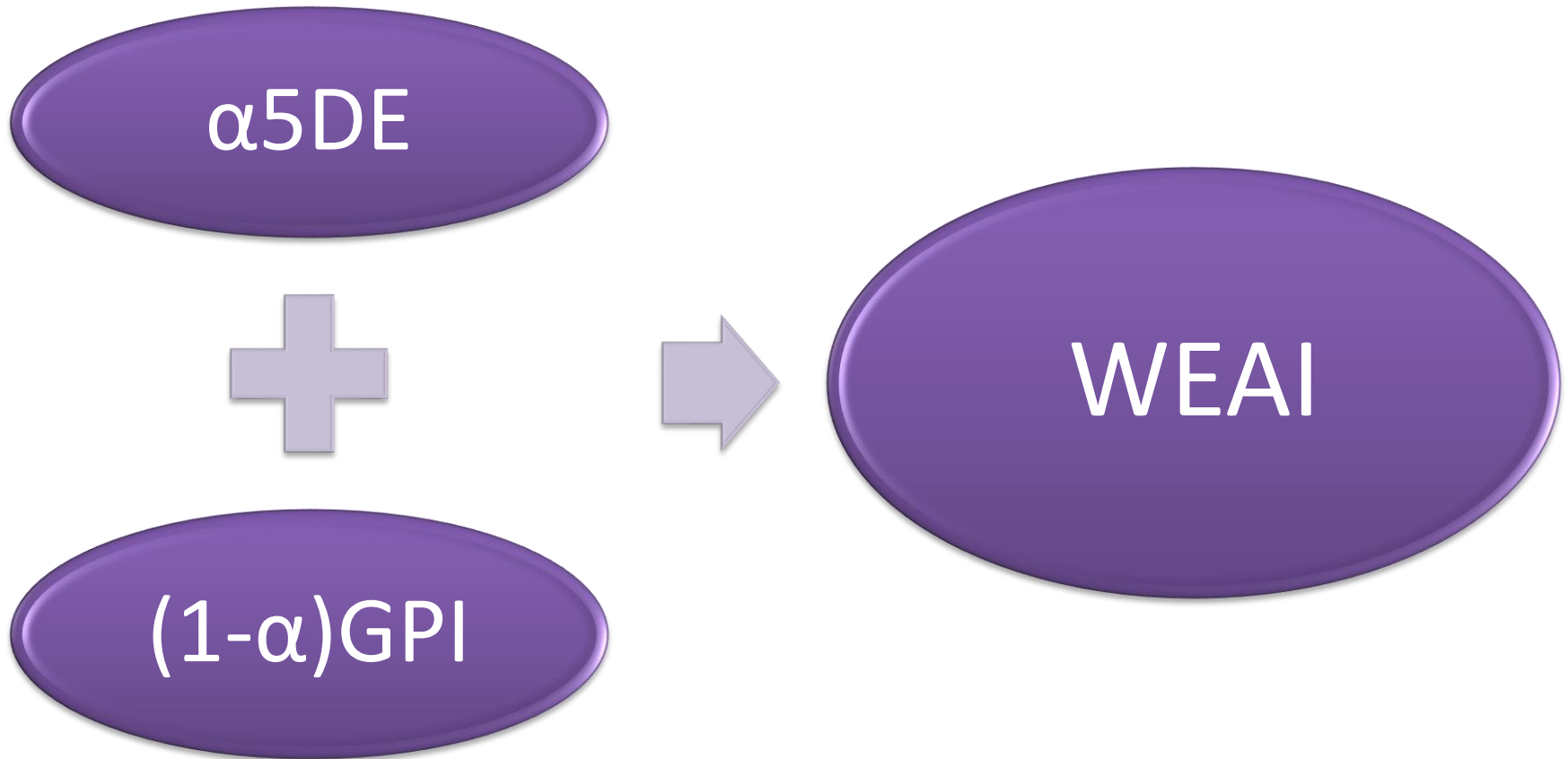Introduction to WEAI

Working with WEAI: A Case Example
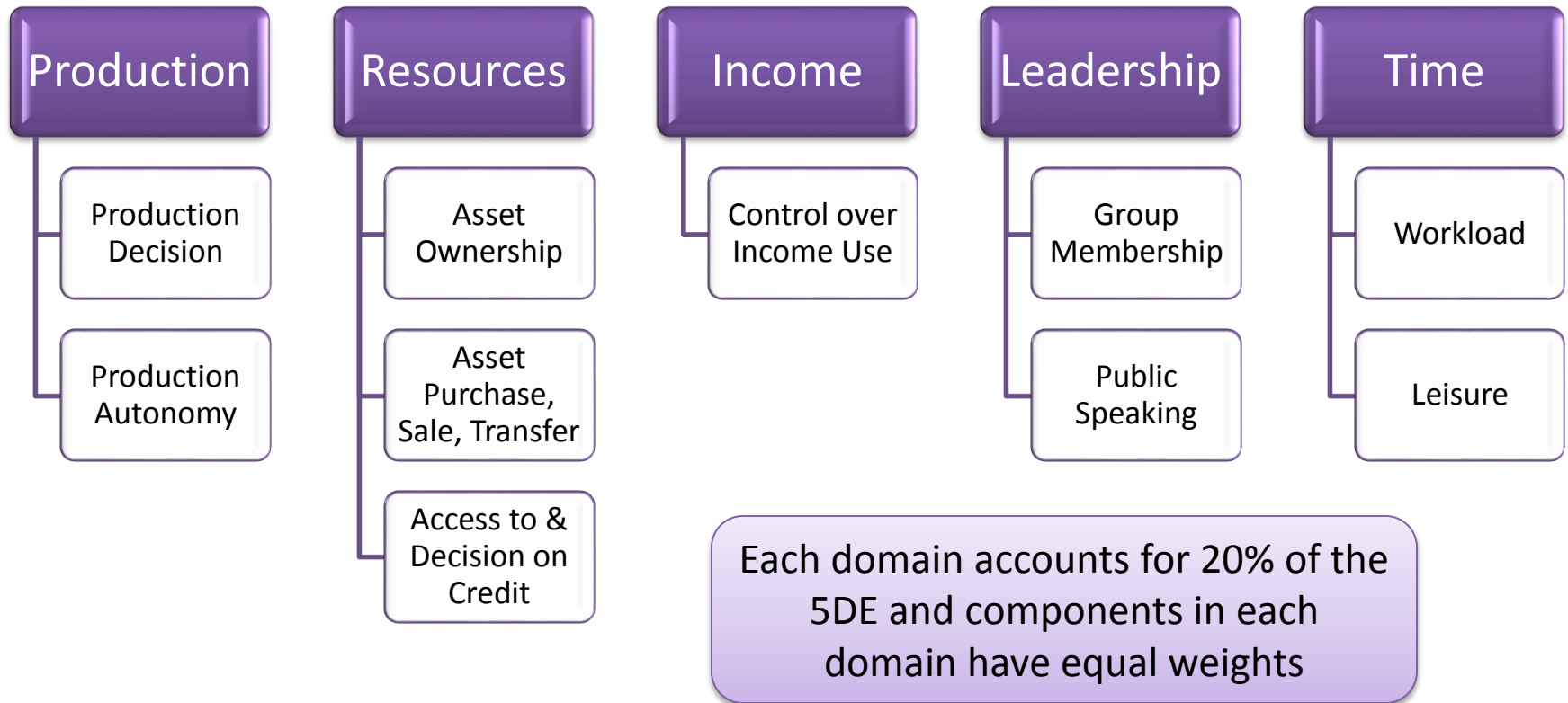
What is WEAI?

- Examines women's engagement in agriculture in five areas: production, resources, income, leadership, and time use

- It also measures women's empowerment relative to men within their households, providing a more robust understanding of gender dynamics within households and communities

What is WEAI?

α5DE

+

(1-α)GPI

→

WEAI

5 Domains of Empowerment

Production
- Production Decision
- Production Autonomy

Resources
- Asset Ownership
- Asset Purchase, Sale, Transfer
- Access to & Decision on Credit

Income
- Control over Income Use

Leadership
- Group Membership
- Public Speaking

Time
- Workload
- Leisure

Each domain accounts for 20% of the 5DE and components in each domain have equal weights

5 Domains of Empowerment

- 5DE is discussed in terms of adequacy
- Adequacy is based on specific answers to the questions posed for each of the components of the 5DE

Criteria for (in)adequacy in the indicators

Indicator	Adequacy Criteria
Input in Productive Decisions	A woman is adequate if she participates or feels she has input in at least two types of decisions.
Autonomy in Production	A woman has adequate achievement if her actions are motivated more by her values as opposed to her fear of disproval or feelings of coercion.
Ownership of assets	A woman is adequate if she has joint or sole ownership of at least one major asset.
Purchase, sale, or transfer of assets	On assets owned by a household, a women is adequate if she is involved in the decisions to buy, sell, or transfer assets.
Access to and decisions on credit	An adequate woman belongs to a household that has access to credit and when decisions on credit are made, she has input in at least one decision regarding at least one source credit.

Criteria for (in)adequacy in the indicators

Indicator	Adequacy Criteria
Control over use of income	A woman is adequate if she has some input (or perceived input) on income decisions provided that she participated in the income generating activity.
Group Member	A woman is considered adequate if she is a member of at least one group from a wide range of economic and social groups.
Speaking in Public	A woman is deemed adequate if she is comfortable speaking in public in at least one context.
Leisure Time	A woman has adequate leisure time if she does not express any level of dissatisfaction with the amount of leisure time available.
Work Burden	A woman is inadequate if she worked more than 10.5 hours in the previous 24 hours.

5DE Results: SADA Area

0.725 — Proportion of women who are considered disempowered, i.e., with inadequacy score greater than 0.20 (or adequacy score less than 0.8)
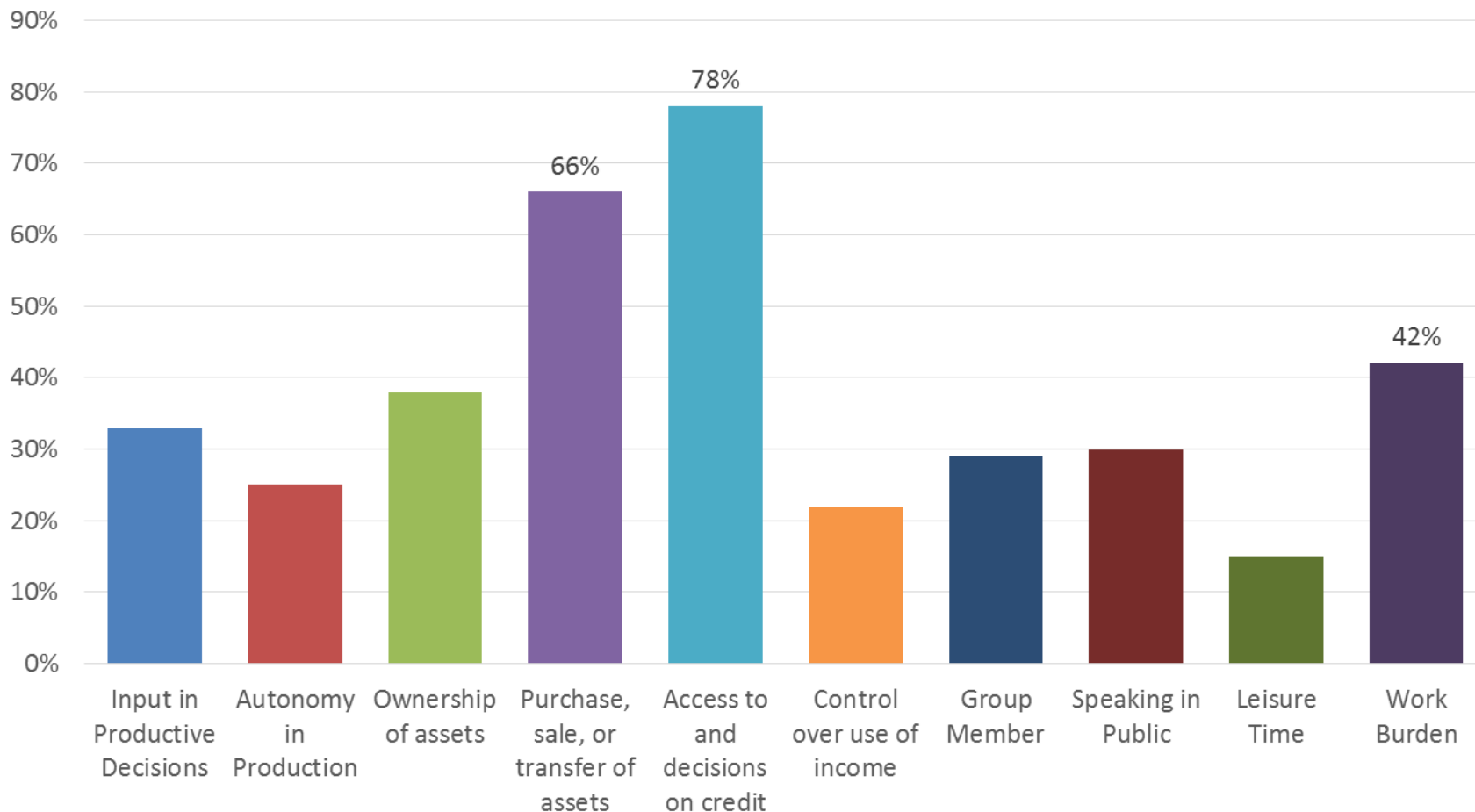
0.409 — Average inadequacy score for the disempowered women, women with inadequacy in at least 2 out of 5 domains
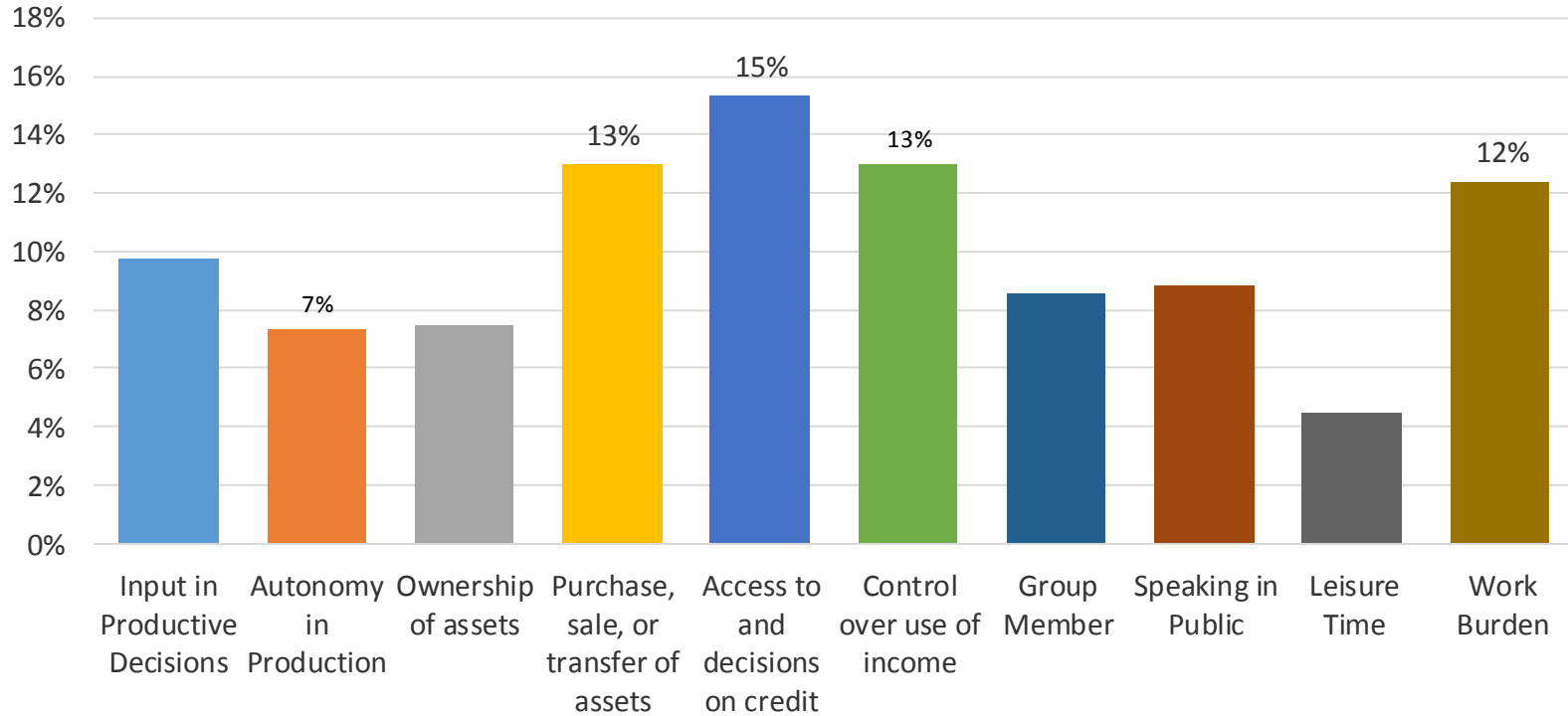
5DE — **1-(0.725* 0.409) = 0.703**

Percentage of women with inadequacy count for each of the 10 indicators.

Percentage Contribution of each indicator to disempowerment

Gender Parity Index

- It measures the percentage of women living in households with an adult primary male where the *women's empowerment scores* are at least equal to the men's

- Reflects the inequality in 5DE profiles of adult male and adult females in each household

- Therefore, GPI is a relative *measure of inequality* in the household

Gender Parity

GPI in the SADA Area

0.704	Proportion of women without gender parity
0.268	Average Empowerment Gap (between male and female counterparts)
GPI	1- (0.704*0.268) = **0.811**

WEAI for SADA Region

Recall that the WEAI was defined as the weighted sum of 5DE and GPI

5DE = 0.703 and **GPI** =0.811

If α is 0.9, then the **WEAI** is 0.9(5DE)+0.1(GPI)

WEAI = 0.714

Uses of WEAI

Original purpose

Tracking progress toward gender equality in FtF programming

Tracking change in women's empowerment resulting directly or indirectly from FtF interventions

- How would you use the WEAI as a policymaker addressing poverty reduction in the SADA Area?

WEAI Resources

USAID (with data sets)

- http://www.usaid.gov/developer/WEAI

Feed the Future

- http://feedthefuture.gov/article/release-womens-empowerment-agriculture-index

IFPRI

- http://www.ifpri.org/book-9075/ourwork/program/weai-resource-center

OPHI

- http://www.ophi.org.uk/policy/national-policy/the-womens-empowerment-in-agriculture-index/

Part II: A Case Example of How WEAI May Be Used

The Health Effects of Women's Empowerment: Recent Evidence from the SADA Area, Ghana

Women in Developing Countries: Literature Review

- Labor supply
  - On average, women supply 43-50 percent of the agricultural labor force
  - The proportion in Sub-Saharan Africa is estimated to be higher
  - Constitute significant proportion of wage workers (FAO, 2010, 2011)
- Family responsibilities
- Extra-family responsibilities

Women in Developing Countries: Literature Review

- Women's health status is influenced by their access to and control over resources that affect food availability and their ability to be responsible for their health care needs (Mabsout, 2011; Sahn and Younger, 2009).

- The empowerment of women to have more decision rights over the dimensions of their lives that affect their health and capability in performing their responsibilities effectively has been receiving significant attention in recent years (De Schutter, 2013; FAO, 2011).

Research Question and Rationale

To what extent does the empowerment of women influence their health status?

Healthy women will be more productive in the labor force

Healthy women will be better mothers and caregivers

Healthy women will be better citizens in their communities

Because women are caregivers, there is often no one to take care of them when they are sick . . . Healthy women are good for their extra-family dependents

Methods

- The capabilities approach, based on Sen (1985; 1999) centers on the notion that assessments of a person's well-being should not focus only on resources, but on how well a person is able to deploy those resources.

- The Multiple Indicators Multiple Causes (MIMIC) model is employed in this paper to operationalize the capabilities approach.

MIMIC model

- Special specification of a more general SEM
- Allows the development of a latent variable that conveniently links to a number of observable indicators as the endogenous variable
  - Joreskog and Goldberger, 1975; Muthen, 1979
- Used in the past to operationalize the capabilities approach for applications to human development and child well-being
  - Di Tommaso, 2007; Phipps, 2002; Krishnakumar, 2007; and Mabsout, 2011

MIMIC Model
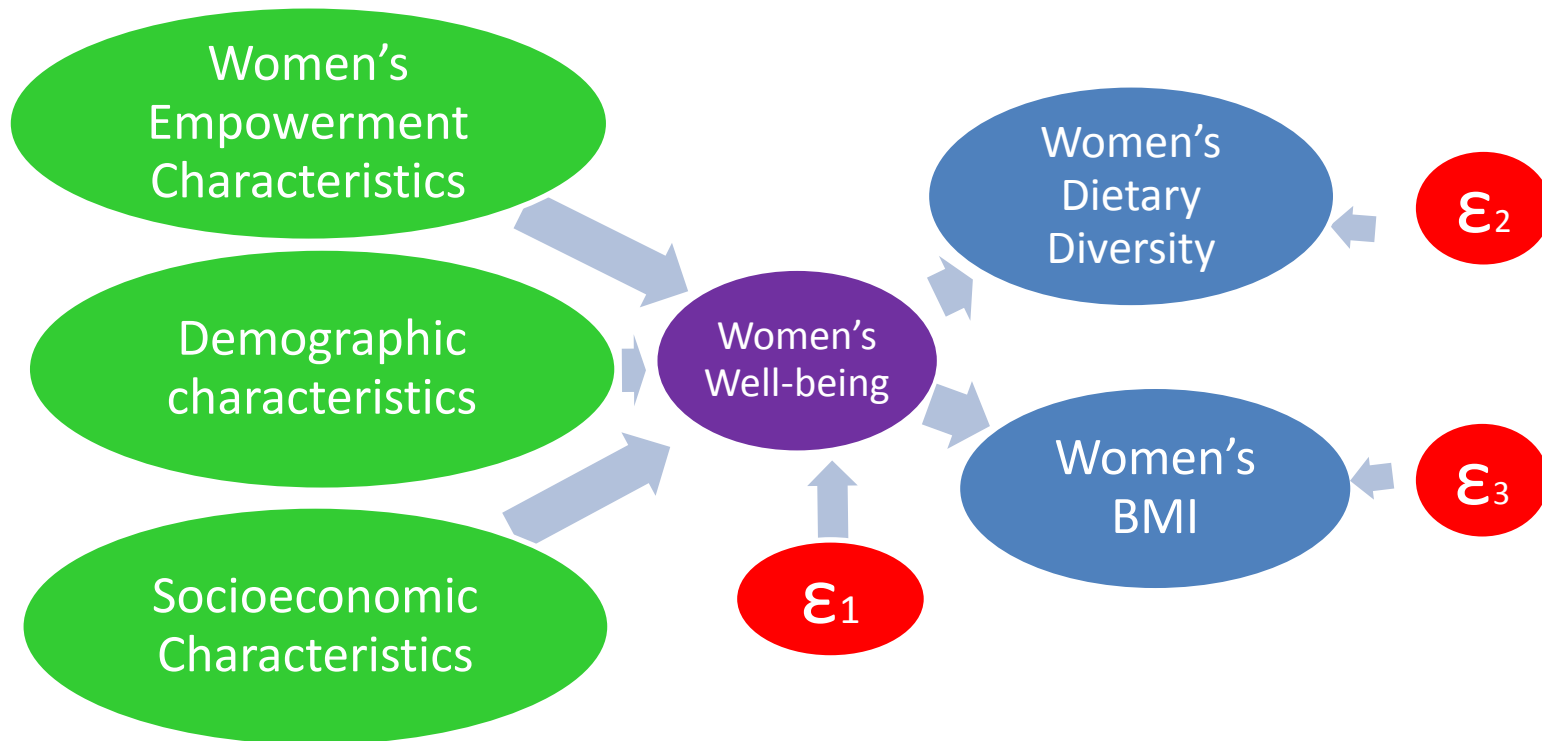
Source: Bollen, 1989

Variables Used

- Health status indicators
  - BMI and DDS

- Demographic and Socioeconomic characteristics
  - Per capita daily household expenditure
  - Age, education, marital status, and religion
  - Region and locale
  - Food insecurity situation

- WEAI Components

Data

- PBS 2012 survey data

- Probability weights used

- The focus is on the health conditions of the primary woman in each household.

- A total of 2,405 women of reproductive age (15 to 49 years)

Health Conditions: BMI and DDS

- While health is a complex multidimensional concept, encompassing physical, mental and emotional components of an individual, BMI and DDS focus only on the physical health aspects.

- BMI is unobtrusive measure defined as the ratio of an individual's weight in kilograms to their height in meters squared (kg/m^2) (WHO, 2006; US DHHS, 2001; NIH, 1998).

- BMI of less than 18.5 kg/m^2 are underweight;

- BMI between 18.50 kg/m^2 and 24.99 kg/m^2 is normal; and

- BMI greater than 25 kg/m^2 is overweight or obese.

Health Conditions: BMI and DDS

- The women's DDS serves as an indicator of women's consumption of foods with adequate micronutrients.

- The score is estimated using a count of nine food groups consumed over the preceding 24 hours (Kennedy et al. 2011).

- The nine food groups are: (1) starchy staples; (2) dark green leafy vegetables; (3) other vitamin A rich fruits and vegetables; (4) other fruits and vegetables; (5) organ meat; (6) meat and fish; (7) eggs; (8) legumes and nuts; and (9) milk and milk products.

Explanatory variables

- The demographic variables included are age, ethnicity and religion.
  - Four religion affiliations are represented in the religion variable: Christian, Muslim, traditional religions, and no religion affiliations.

- Respondent's socio-economic status is evaluated by three variables:
  - education, income, and marital status.

Explanatory variables

- Education is divided into two categories :
  - No formal education completed versus Basic education or higher including Secondary and Post-Secondary.

- Per capita daily household expenditure is used as a proxy for income to form income deciles.

- Household characteristics include:
  - household size, access to clean drinking water, access to electricity, and proper sanitation conditions, i.e., bathroom conditions

Explanatory variables

- Food insecurity situation
  - captured by the household hunger variable.
  - This binary variable is based on the household hunger scale which measures the quantity of food accessible to the household.
  - represented by two variables: little to no hunger and moderate to severe hunger.

- Living in rural or urban areas is captured by a dummy variable:
  - rural and urban.

Explanatory variables

- WEAI components
  - Inadequacy Count (c_i)
  - 5 Domains of Empowerment represented by the 10 indicators

Summary Statistics

Women Empowerment in Agricultural Variables	Description of variables	Mean	Std. Dev
Inadequacy Count	Inadequate > 0.20	0.34	0.18
Input in Productive Decisions	0=Adequacy; 1=Inadequacy	0.33	0.47
Autonomy in Production	0=Adequacy; 1=Inadequacy	0.26	0.44
Ownership of assets	0=Adequacy; 1=Inadequacy	0.44	0.50
Purchase, sale, or transfer of assets	0=Adequacy; 1=Inadequacy	0.73	0.44
Access to and decisions on credit	0=Adequacy; 1=Inadequacy	0.79	0.41
Control over use of income	0=Adequacy; 1=Inadequacy	0.22	0.42
Group Member	0=Adequacy; 1=Inadequacy	0.29	0.45
Speaking in Public	0=Adequacy; 1=Inadequacy	0.30	0.46
Leisure Time	0=Adequacy; 1=Inadequacy	0.13	0.34
Work Burden	0=Adequacy; 1=Inadequacy	0.45	0.50
Women Well-being Variables			
BMI	Underweight if BMI<18.5	22.33	3.62
WDDS		3.99	1.59

Summary Statistics

Demographic and Socio-economic Variables	Descriptive	Mean	Std. Dev
Age	Years	32.32	7.93
Education	1 = Some formal educational training completed; 0= No formal educational training completed	0.09	0.28
Household Hunger Scale	1= Moderate to severe hunger; 0= Little to no hunger	0.38	0.48
Household Characteristics and Location Variables			
Household Size	Household members	6.21	3.08
Safe Drinking Water	1 = Household drinking water is safe; 0 = Household drinking water is not safe	0.70	0.46
Access to electricity	1 = Access to electricity; 0 = No access to electricity	0.27	0.45
Private Toilet	1 = A private toilet in household; 0 = No private toilet in household	0.14	0.35
Locale	1= Urban; 0 = Rural	0.23	0.42

Results of MIMIC Model of Women's Health Status in Northern Ghana

Structural Model	Coefficient	Standardized Coefficient	Standard Error	Significance
Education	0.002	0.048	0.059	
Age (years)	0.000	0.012	0.078	
Marital Status				
Household Hunger Scale	-0.016	-0.157	0.063	**
Income Deciles	0.010	0.559	0.085	***
Household Size	0.001	0.090	0.067	
Safe Drinking Water				
Access to electricity	0.007	0.063	0.067	
Private Toilet				
Religion				
Ethnicity				
Locale	0.041	0.314	0.067	***

, * denotes significance of standardized coefficients at the 5% and 1% levels, respectively.

Results of MIMIC Model of Women's Health Status in Northern Ghana

Structural Model	Coefficient	Standardized Coefficient	Standard Error	Significance
Input in Productive Decisions	0.006	0.059	0.065	
Autonomy in Production	0.039	0.338	0.069	***
Ownership of assets	-0.017	-0.164	0.071	**
Purchase, sale, or transfer of assets	0.010	0.090	0.069	
Access to and decisions on credit	-0.026	-0.223	0.061	***
Control over use of income	-0.005	-0.037	0.070	
Group Member	-0.018	-0.154	0.057	***
Speaking in Public	0.007	0.063	0.064	
Leisure Time	-0.020	-0.138	0.055	***
Work Burden	-0.006	-0.061	0.062	
Measurement Model				
Log of BMI	1	0.322	0.050	***
DDS	13.332	0.431	0.056	***

, * denotes significance of standardized coefficients at the 5% and 1% levels, respectively.

Data-Driven Policymaking

Analysis of Results

- Five of the ten empowerment indicators exhibit a statistically significant relationship with women's health status

  – Production, resources, access to credit, group membership and leisure time

- Income deciles, household hunger scale, and locale were also statistically significant.

- The coefficients on the BMI and DDS, are positive and statistically significant, suggesting a causal structure with the health status (common latent variable)

Analysis of Results

- The R^2 value for the overall model is 0.92 implying that nine-tenths of the variance in the latent variable is accounted for by the model's explanatory variables.

- The SRMR score was less than 0.05, indicating a good fit of the model.

Summary and Conclusion

- Adequacy in asset ownership and access to credit have a positive impact on women's health status.

- Adequacy in autonomy in production has a significant impact on women's health status; however, the direction of the impact is counter intuitive.

- Women's empowerment (based on the **ci**) not significant, but with expected sign.

- Income, has the largest impact on improving women's health status (largest standardized coefficient of 0.56).

Summary and Conclusion

- While women's empowerment is a goal within itself to achieve gender equality, results indicate that it can lead to achievement of other development goals such as gains in human capital formation through improved health status.

- It is plausible that some of the indicators of women's empowerment can improve women's health status and in so doing enhance their ability to perform effectively their socioeconomic responsibilities, including contributing to agricultural production in ways that reflect their labor productivity (Smith et al., 2003).

Thank You

Conversations

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