MEASURING PROGRESS TOWARDS ERADICATION OF EXTREME POVERTY AND HUNGER: Does hunger have a greater influence on progress than is currently estimated?

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ABSTRACT

As countries assess progress towards MDG1- "Eradication of Extreme Poverty and Hunger", measurement of trends in welfare is dominated by uni-dimensional monetary measures with little or no emphasis on a broader range of aspects related to quality of life. While the former approach is widely used in developed countries, a fundamental question remains as to whether the same measure can be extended to pre-dominantly agricultural developing economies and still provide a fair assessment of progress towards achievement of MDG I. This paper specifically argues that food security and human development are intricately linked, and that measurement of progress on MDG1 would be better achieved using a multidimensional measure that simultaneously combines food security with the most salient aspects of human development.

1. INTRODUCTION

Food security has moved to the forefront of the development debate due to the compounding effects of sharp increases in food prices in 2007 up to mid-2008 and the global economic downturn of 2009 which are estimated to have reversed the steady decline in the proportion of undernourished population in developing countries experienced from the late 1960s to 2006 (FAO 2009a). Estimates suggest that the share of the population in developing countries suffering from hunger increased in both 2008 and 2009, reaching close to 20 percent (FAO 2009a). This may imply a reversal in progress towards achievement of Millennium Development Goal 1.

The multidimensionality of poverty is now widely recognized. The position taken by the World Bank in its report on poverty 2000/2001, as well as, the adoption of a battery of official social exclusion indicators by the European Union gives evidence that the Multi-dimensional aspect of poverty has already become of great concern and is called to take a more important place in the study of this phenomenon.

The relationship between food security and human development can be traced back to the seminal work of Amartya Sen on poverty and famines (Sen 1981, Sen 1982) based on a new analytical framework he developed. In this framework, hunger (and broader destitution) was a consequence of "entitlement failure" or the inability of people to access and command food through legal means. This analytical framework

contradicted the common explanation (and policy responses) of famines being caused by a decline in the availability of food; Sen showed that famines could occur when certain groups could not purchase food, either because of a spike in prices or a fall in wages or both. Sen's approach implies that food insecurity should not be thought to strictly to supply. In other cases, hunger may be as a result of forced reduction in demand for food due to increasing price.

Food insecurity in Sub-Saharan Africa is characterized by widespread and chronic hunger and malnutrition as well as recurrent and acute food crises. This has worsened with by sudden crises that create bouts of acute hunger (Wiggins 2009).Most recently the sharp increase in food prices has resulted in increasing expenditures on food with diminishing dietary adequacy. The most vulnerable especially the urban poor who rely on markets for food have had to reduce consumption or resort to coping strategies such as sale of assets in order to survive.

The emerging issue is that while expenditures are seen to increase in real terms, the quality and quantity of food available is actually diminishing. Therefore measuring progress towards MDG 1 with emphasis on uni-dimensional income- expenditure measures may not give a fair assessment of developing countries in the recent past.

This paper contributes to efforts to define a broader framework of analysis that combines both approaches to improve assessment of human development at the level of definition and measurement in a complementary rather than in an antagonist way. The paper is structured as follows: Section 2 presents details of the data and methods used for the analysis. Section 3 presents results emerging from descriptive analysis and illustrative comparison of distributions of index-based poverty rankings using DASP. Finally, Section 4 concludes with a note on policy implications and recommendations for further research.

2. METHODOLOGY
2.1 The Data

The paper draws on data for a sub-sample of about 2500 households in the 2005/06 Uganda Demographic and Health survey (UDHS). Typically, like most demographic and health surveys the UDHS focused on various aspects of well-being related to health, fertility and sexual behavior with minimal attention to economic status. However for the sub-sample studied in this paper, corresponding income household consumption and expenditure data was collected through the 2005/06 Uganda National Household Survey (UNHS III). This dataset represents the most recent and, probably, the richest collection of indicators currently available for realizing multidimensional analysis of poverty and deprivation in Uganda.

2.2 The welfare measures

The dataset offers two measures of welfare: the Wealth Index (WI) and Household Consumption Expenditure per Adult Equivalent (HCE)[1]. An additional composite index is computed to combine these measures with prevalence of hunger[2]. For the purpose of this paper, monthly household consumption expenditure per adult equivalent will be used as a uni-dimensional measure to represent monetary value of household consumption in real terms. The wealth index is the other measure of welfare which is based on the DHS wealth index factor score generated through Principal Components Analysis (PCA). The resulting asset

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[1] The wealth index is a multidimensional measure computed using Principal Component Analysis (PCA) on selected assets of the household while the Household Consumption per Adult Equivalent is a uni-dimensional measure based on monetary value of household consumption in real terms.

2 Prevalence of hunger will measured using prevalence of stunting(regional level) and household -level dietary intake

scores are standardized in relation to a standard normal distribution. The third measure is a multidimensional Social Economic Status index which combines household dietary intake [3], household consumption expenditure and the wealth factor score.

2.3 Method

Three continuous variables namely household expenditure per adult equivalent, wealth index factor score and kilocalories per person per day, were combined into an index using Principal Component Analysis. As the raw data were not standardized, and therefore not expressed in the same units, the analysis was run using the correlation matrix to ensure that all data have equal weight. The outcome was a factor score which will be referred to as the composite index of Socio-Economic Status (SES) in this paper.

The sample was classified into quintiles on the basis of household expenditure, household wealth index and the composite SES index. The author uses simple descriptive statistics to explore complementarities or divergencies between the SES index and household expenditure measure of welfare by studying with-in quintile proportions of those originally classified as poor on basis of household expenditure. In this approach, the study sample is classified into quintiles on basis of each of the three measures; then simple frequency distributions are used to study the proportions of population whose pre-determined poverty status is consistent with quintile classification based on each of the two measures. Further, by studying movements within quintiles, the analysis shows the proportion the proportion of sample population who would be better off on basis of the composite index.

The paper also uses the Distributive Analysis Stata Package (DASP) to explore differences in cumulative distributions of the sample arising from the alternative measures of welfare. Normal distributions of each of the measures are presented in an illustrative comparison of dominance for urban and rural areas.

3. APPLICATION

3.1 Descriptive statistics of the welfare measures

As a first step, a descriptive analysis is done for all the variables, looking at means, frequencies and standard deviations (see Table 1).

Table 1: Descriptive statistics on the welfare measures

Variable	Observations	Mean	Std. Deviation	Min	Max
Monthly Consumption expenditure per adult equivalent	2689	44,873	53,629	2,620	1,005,891
Wealth Index factor score	2689	.1311675	.98	-1.62	4.16
Kilo-calories per person per day	2619	2296.2	1622.6	9.0	17785.1

3.2 Complementarity of welfare measures

Complementarities of welfare measures were explored by studying convergence in classification of study population into quintiles on basis of the SES and HCE measures. Table 2 shows the households cross-classified by quintiles based on per member expenditures and the SES index. If all households were classified in the same quintiles for each measure, only the diagonal cells would be

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3 Household dietary intake was computed as household energy acquisition in terms of kilocalories per person per day derived from estimated quantity of food consumed by the household as reported through a seven-day recall approach.
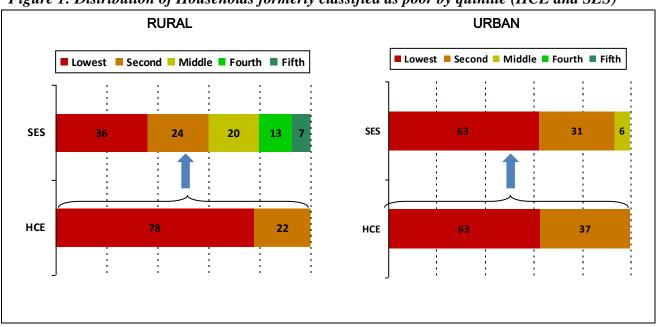
filled. While the proportion of households classified into the same quintile by both measures is consistently higher for each column, it is evident that there is a movement of households formerly classified as poor (quintile 1 and 2) by the HCE into higher quintiles (4 and 5) on basis of the SES index.

Table 2: Distribution of households by quintiles for per-member household expenditure and SES index

Quintile (SES index)	Quintile (Per member household expenditure-HCE)				
	Lowest	Second	Middle	Fourth	Fifth
Lowest	40.2	22.7	16.3	10.9	9.2
Second	24.8	23.3	20.1	16.8	14.6
Middle	20.1	23.7	21.4	18.0	16.6
Fourth	10.9	19.0	21.0	24.1	25.4
Fifth	4.1	11.3	21.2	30.2	34.2
Total	100.0	100.0	100.0	100.0	100.0

A further comparison of quintile classifications in rural and urban areas reveals that amongst households formerly classified as poor on basis of monetary expenditure, 40% in rural areas   and 6% in urban areas moved into higher quintiles on basis of the SES index implying that they appeared better off by the multi-dimensional measure. Figure 1 shows that using the HCE measure all poor households are restricted to the lowest 2 quintiles in both urban and rural areas. Using the SES index there is a gradual transition across quintiles with a marked drop in proportion of formerly poor households in the lowest quintile in the rural areas. The fact that many households in rural areas are seen to move out of the poor bracket with the SES index suggests the important contribution of the additional dimension of food acquisition to overall welfare. This result is not surprising considering that household food availability is enhanced by engagement in subsistence agriculture which is mostly common amongst rural poor households.

Figure 1: Distribution of Households formerly classified as poor by quintile (HCE and SES)
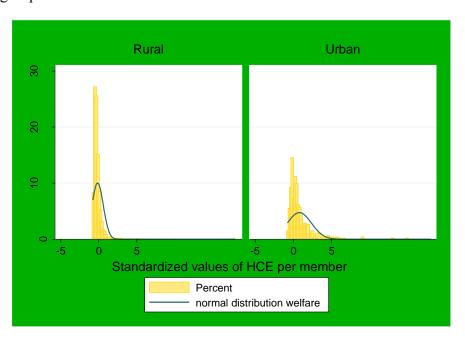
3.3 Cumulative Distributions of the measures of welfare

In order to highlight possible effects of welfare measures on overall distribution of the incidence of poverty, simple cumulative distributions of households based on standardized values of expenditure per adult equivalent and the SES index according to residence are presented in this sub-section. From the distributions it is evident that the SES index has an obvious effect on inequalities within and across population groups.

Figure 2: Distribution of standardized household consumption expenditure per adult equivalent.

With regard to per member household expenditure in real terms, we note high percentages of rural households with low scores mostly clustering around the mean. The cumulative total of these households is about 50 percent of rural population.

In urban areas more households score above the mean with a cumulative percentage of about 20 percent scoring below the mean. While both distributions are relatively skewed, there is a higher proportion of households with low expenditures in rural areas on average. It is also notable that positive outliers are more likely in both distributions suggesting increased incidence of inequality.
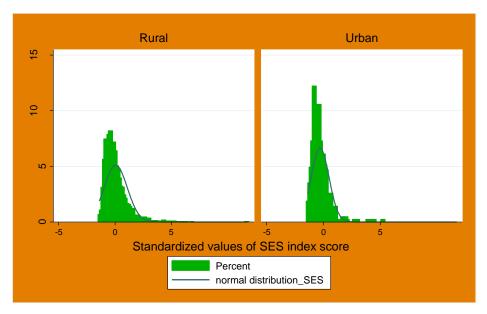

Figure 3: Distribution of standardized Socio-Economic Status scores.

The distribution based on the SES score shows a reversal in the pattern seen in figure 2 above with an increased proportion of rural households scoring above the mean yet a decreasing proportion in the urban areas. Urban areas present generally lower scores as shown by a higher proportion of households with scores below the urban mean.

4. CONCLUSION

The main advantages of traditional monetary measures are from a practical order that lies in the simplicity of measuring them. They can be useful in counting poor people and targeting a population at economic risk. In addition, they give information relevant to implementation of transfer policies to bridge the poverty gap. These policies are useful because they can alleviate poverty but in the short term. Socio economic indices based on assets and living conditions may be more reflective of longer-run household wealth or living standards but may fail to take account of short-run or temporary interruptions, or shocks to the household (Filmer and Pritchett 2001). Therefore, if the outcome of interest is associated with current resources available to the household, then an index based on assets may not be the appropriate measure.

Yet still, when you take poverty to be multidimensional in its causes and consequences, the problem is that there is no guarantee that an economic answer to the economic dimension problem would reach the other dimensions and that it would allow poor people to leave persistently from their situation of poverty. As shown in this paper, some variables may have a different relationship with Socio Economic Status across sub-groups; for example, household energy acquisition may be more reflective of wealth in rural areas as has been evidenced with the additional measure on kilo-calories per person per day. Therefore, while monetary food expenditures, used in isolation, may not always depict overall welfare status, alternative welfare measures may not necessarily offer a perfect substitute and would better be used in combination rather than in isolation. Henceforth, it might be interesting to see how we could use both approaches in a complementary way.

4.1 Recommendations and Areas for further research

Although several aspects of the complex interactions between food security and human development factors are well researched, the interactions between the determinants of food security and the most salient dimensions of human development as captured in the human development index (HDI) need to be systematically documented. These linkages could be studied at the three dimensions of food acquirement namely: food availability, accessibility, and utilization.

5. REFERENCES

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