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Generating evidence on individuals' experience of food insecurity and vulnerability

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ABSTRACT

Many indicators of food security and vulnerability are reported at the household level, preventing policymakers from identifying how differences among individuals within the household affect individual food security and vulnerability. Using examples from three recent studies from Uganda, Bangladesh, and Ethiopia, the paper illustrates how using individual – rather than household-level measures allows a better understanding of three dimensions of food security: agricultural productivity, impacts of development interventions on well-being, and coping mechanisms in response to shocks. It then discusses methods to elicit information on individual experiences of food security and vulnerability, including the use of measures of gender disaggregation that go beyond headship, the use of individual measures of well-being, and modifications of household level questions on coping mechanisms.

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1. Introduction

Although hunger and deprivation are intrinsically experienced by *persons*, many indicators of food security and vulnerability are reported at the household level. While cost and complexity considerations may lead policymakers to use household-level indicators of hunger and food insecurity such as the Household Hunger Scale (Deitchler et al., 2011), the exclusive reliance on household-level indicators prevents a closer look at how differences among individuals within the household—whether due to sex, age, or status within the household—affect individual food security and vulnerability.

The debate regarding the usefulness of household vs. individual-level measures of food insecurity mirrors an earlier debate regarding the measurement of well-being. According to Haddad and Kanbur (1990), policymakers often argue that individual wellbeing can be equated with the average (or per adult equivalent) well-being of the household to which the individual belongs, based on the assumption that household resources are pooled, and then allocated according to need. The authors illustrate empirically that neglecting intrahousehold inequality substantially understates levels of inequality and poverty. Accumulating empirical evidence from developed and developing countries rejects the unitary model of the household, in which household resources are pooled, and household decision-makers share the same preferences. Instead, there is growing consensus that a collective model of the household is more relevant—a model in which individuals within households do not necessarily share the same preferences, pool resources, nor have equal bargaining power over their allocation to individual members (Behrman, 1997; Haddad et al., 1997). Yet, despite growing evidence in support of the collective model of household decision-making, the information base on food security—particularly on agricultural productivity and food production—still depends heavily on household-level indicators. This is not to say that data on individual (age and sex-specific) welfare outcomes do not exist. Indicators of human capital outcomes are routinely collected at the individual level, such as anthropometric indicators for nutrition surveillance and monitoring, enrollment data to track investments in human capital by age and sex, and mortality indicators, capturing the opposite extreme of well-being.[1] It is rare, however, that these individual-specific data on human capital outcomes are linked to production data for the same household.

This paper uses examples from three recent studies from Uganda, Bangladesh, and Ethiopia to illustrate how using individual—rather than household-level measures gives policymakers a better understanding of three dimensions of food security: agricultural productivity, impacts of development interventions on well-being, and coping mechanisms in response to shocks. In particular, the availability of individual-level data allows us to test hypotheses about the extent to which differences across individuals within the

[1] See, for example, Baird et al. (2011), who examined the impact of aggregate income shocks on infant mortality in developing countries. Showing a large negative association between per capita GDP and infant mortality, the authors also find that female infant mortality is more sensitive than male infant mortality to negative economic shocks.

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household affect food security outcomes. In Uganda, Peterman et al. (2011) show how using only a household-level indicator of gender differences (the sex of the household head) tends to underestimate gender differences in agricultural productivity. In Bangladesh, evidence from an evaluation of the long-term impact of agricultural technologies suggests that using individual health and nutrition outcomes as criteria for ranking anti-poverty interventions would lead to different conclusions compared to those based on household-level monetary indicators alone (Kumar and Quisumbing, 2011). In Ethiopia, Kumar and Quisumbing (2013) show how focusing only on household-level coping mechanisms may obscure differential impacts of shocks on household members by age and sex. The paper ends by discussing a variety of methods to elicit information on individual experiences of food security and vulnerability, ranging from the use of finer levels of gender disaggregation that go beyond headship, the standard use of individual measures of well-being (such as nutritional status), and modifications of household level questions on coping mechanisms to take into account differences that arise owing to age and sex within the household.

2. Individual vs. household indicators of agricultural productivity in Uganda

There is marked interest in the sources and consequences of agricultural productivity differences between male and female farmers, particularly in sub-Saharan Africa (SSA), with female farmers consistently showing lower yields. In the absence of data on inputs and outputs at the plot level, one could surmise that women are less efficient than men in agricultural production. However, reviews of the microeconomic empirical evidence on male–female differences in agricultural productivity (Quisumbing, 1996; Peterman et al., 2010) have found that productivity differences can partially be explained by lower input application on women's vs. men's plots. While one solution might be to increase input application, this is clearly a simplistic solution, because we still do not fully understand why inputs are lower on women's plots, given that farmers do choose the type and amount of inputs to apply, how inputs can realistically be increased, since women typically have greater difficulty obtaining access to credit, and how cultural and contextual factors affect the division of labor and resource allocation to men's and women's plots. Most empirical studies (with notable exceptions) also focus on one crop, thereby neglecting multi-crop farming systems in much of SSA; use sex of household head as the indicator for capturing gender differences, neglecting crop cultivation by males and females within the same household; and have relatively small sample sizes. Finally, because good quality data at the plot level are rare, studies are difficult to replicate.

The use of a household level indicator such as sex of the household head as a proxy for gender differences within the household is typical of this literature, and with few exceptions, studies do not undertake sensitivity analyses regarding the choice of gender indicator. One exception is a paper by Doss and Morris (2001) which points out that using the sex of the farmer allows for examination of female farmers in both male- and female-headed households. This is significant because, as Bourdillon et al. (2002) point out, even in female-headed households of rural Zimbabwe, men (such as adult sons) are expected to make agricultural decisions. Moreover, even among female-headed households, the reason that one became female-headed—whether due to widowhood, or whether the husband is a migrant—may have significant implications for decisionmaking ability as well as levels of well-being. Because sex of household head is not always a perfect indicator of female control over resources or decision-making, there is a need for more studies that conduct sensitivity analysis between measures of female management and female headship.

Peterman et al. (2011) provide new estimates of gender differences in agricultural productivity using household survey data from Uganda (2003) covering 2700 plots in 851 households, collected by the International Food Policy Research Institute (IFPRI). In addition to information about the sex of the household head, the data also include the sex of the owner of each plot, by crop, and also allows for mixed ownership. The authors use multivariate tobit models to model productivity differences, controlling for socioeconomic indicators, agricultural inputs, crop choice, access to markets, and biophysical plot characteristics. The authors also conduct robustness checks for alternative definitions of the variables, such as the percentage of land managed by women, and excluding polygamous households. Similar to previous studies, the authors find that productivity is lower for female-managed crops when all crops are pooled, and also lower for sweet potato and sorghum (but not for other crops). They also find that estimates of productivity differences are sensitive to the choice of gender indicator: the extent of the estimated productivity differential is *smaller* when headship is used as stratifying variable.[2]

Further results from the Uganda analysis suggest that, controlling for other factors plot-level productivity is lowest among crops with mixed gender ownership, suggesting the presence of household bargaining difficulties between men, women, and children. However, when they control for household fixed effects, they find that productivity on female-owned plots is lower but that the mixed ownership indicator is no longer significant, possibly because the mixed ownership classification captures the impact of unobserved household characteristics. Thus, to better measure agricultural productivity, and to ascertain the causes behind gender differences therein, one needs to use more disaggregated indicators such as sex of plot manager. Such data collection efforts are being encouraged by FAO's support to the agricultural censuses, but such sex-disaggregated data need to be analyzed and used more to inform policy. The availability of individual-specific data will also enable us to examine whether impacts of interventions vary at the individual vs. the household level.

3. Comparing individual and household impacts of new agricultural technologies in Bangladesh

A study evaluating the long-term impact of agricultural technologies in Bangladesh provides another example of differences in conclusions about the effectiveness of new technologies when one uses individual vs. household-level indicators of food security (Kumar and Quisumbing, 2011). In 1996–1997, the IFPRI and Data Analysis and Technical Assistance Ltd. (DATA) conducted an initial series of surveys to evaluate the impacts of improved vegetable and polyculture fish management technologies on household resource allocation, income, and nutrition. Households were surveyed in three sites in rural Bangladesh where nongovernmental organizations (NGOs) and specialized extension programs disseminated new vegetable and fish technologies. These new technologies were: (1) improved vegetable varieties, disseminated in Saturia by a local NGO to women's group members who grow vegetables on small plots on or near the household compound; (2) polyculture fish technologies, disseminated by a medium-sized local NGO in Jessore, which arranged

[2] Headship also blurs distinctions between male- and female decisionmaking if, for example, adult sons assume decisionmaking in female-headed households.

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