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Measuring Poverty in Less Than 60 Minutes

The first objective of the Sustainable Development Goals is a world free of poverty by 2030. The World Bank – in addition – embraces boosting shared prosperity to reduce inequality. Working towards poverty reduction requires measuring poverty to track progress and adjust programs and policies to become more impactful based on evidence. However, traditional methodologies to estimate poverty are based on lengthy household budget surveys that take hours or even multiple days to administer. In fragile states and areas beset by insecurity and conflict, the time available for a face-to-face interview is typically more limited due to insecurity. Limiting measurement of poverty specifically in those areas is a major concern as 23 percent are already living in fragile countries, expected to further increase to 60 percent by 2030. In addition, lengthy modules increase respondent and enumerator fatigue contributing to measurement error, while limiting the breadth and depth of the remaining questionnaire modules, for example on health, education, remittances and perceptions.

The most straight-forward way to reduce the interview time is to skip items that are rarely consumed or to ask an aggregate amount (e.g., total expenditure on fruits) instead of individual items (e.g., expenditure on apples, oranges, and so on). However, changing the set of items in the questionnaire can result in a nontrivial change in the reported consumption amount (Lanjouw and Lanjouw, 2001). Both approaches are likely to lead to an underestimation of consumption and overestimation of poverty (Beegle et al, 2012).

Alternatively, one can combine a full consumption survey with another shorter survey. For example, a full consumption survey can be combined with a labor force survey, the latter of which is shorter and more frequently conducted than the former, to produce updated estimates of poverty for years in which consumption surveys are not available (Doudich et al, 2013). While such methods may work well even when there is a rapid economic change (Christiaensen et al, 2011), the assumption of stable structural parameter typically cannot be tested and may not be applicable in the context of fragile states where large and systemic shocks may be prevalent. Further, if there is no baseline survey available, it is not possible to update poverty with a short survey.

It is also possible to design a survey such that one sample has a full consumption module and another sample has only the covariates of consumption, which are then used to impute consumption, to estimate poverty at a reduced cost even though the magnitude of cost

reduction that can be achieved may be modest (Fujii and van der Weide, 2013). While their primary purpose is to understand how much costs can be saved by not collecting outcomes that are expensive to collect without compromising the accuracy of estimates (Faizuddin et al, 2014), a similar approach can be in principle taken in the data collection in fragile states. However, there is likely to be an additional layer of complication because it may not be possible to select the full consumption module sample randomly due to the security constraint. For example, if only a shorter survey can be used in unsafe areas, the predicted consumption using the model parameters estimated with the consumption data in relatively safe areas may be biased.

The Rapid Consumption methodology presents a new approach to obtain unbiased estimates of poverty when the time to conduct interviews is a binding constraint, potentially also reducing respondent and enumerator fatigue while creating space to administer additional in-depth modules aside consumption. The general idea is outlined in a World Bank Working Paper, including an ex-ante application to Somalia (Pape and Mistiaen, 2018).

The rapid consumption survey methodology applies a split-questionnaire design to the consumption module of a questionnaire to generate systematically missing data, which can be conveniently imputed. Instead of assigning all consumption items to all households, important items are assigned to a core module, while the remaining items are split into two or more optional modules. Each household then reports on the core module, as well as on one of the optional modules. This reduces the interview time considerably, down to 45 to 60 minutes per household. We pay for this gain by accepting the missing information from the optional modules that were not administered to the household. However, we offset that by administering those optional modules to other households. This allows us to estimate the missing information for one household based on the information collected from other households.

The paper proposed for the conference will use the idea presented in the working paper to explore more comprehensively the proposed methodology, assess its performance in a more structured way, and present and assess an application in Kenya. More specifically, the paper will:
• Use improved notation to describe the methodology;
• Derive from theory the properties of the estimators;
• Include a two-stage estimator allowing for a log-transformation of consumption;
• Perform the variable selection of the model with standard algorithms without using previous survey information;

- Using Kenya's Integrated Budget Household Survey from 2005/6, 2015/16 as well as a pilot implementing the rapid consumption methodology alongside the 2015/15 survey to

o Explore the estimators' performances relative to the number of items in the core module as well as the number and composition of optional modules;

o Compare the performance of the best estimator with a reduced consumption approach including an updated poverty line relative to expected duration of the interview;

o Using the 2005/6 data for training and 2015/16 data for assessing the performance of the different methodologies; and

o Compare the results from the rapid consumption pilot with the full consumption data in 2015/16.