

Frequent and timely monitoring of poverty using SWIFT during the COVID-19 Pandemic

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The frequent and timely monitoring of poverty is a big challenge for many developing countries, especially low-income countries and fragile states where such monitoring is needed the most. According to the World Bank's global poverty monitoring database, the average interval of official poverty data in sub-Saharan Africa is six years. This is because collecting household expenditures or incomes, which are necessary for estimating poverty rates, is time-consuming, expensive, and resource-intensive. For example, collecting household expenditures/incomes and producing official poverty estimates cost multi-million US dollars, require more than two years to complete, and need well-trained enumerators. Such a lack of frequent poverty data makes it almost impossible to measure the impact of the COVID-19 Pandemic on poverty and track the recovery process.

The Survey of Well-being via Instant and Frequent Tracking (SWIFT) was created to address this data gap. The basic idea of SWIFT is simple. SWIFT imputes household expenditures or incomes from data collected from 10 to 15 questions in a survey. To produce reliable poverty estimates, SWIFT has a package of recommendations, including (i) how to train imputation models using the most recent household budget survey, (ii) how to collect a household survey (if needed), (iii) how to adjust sampling weights (if needed), (iv) how to impute household expenditures/incomes, and (v) how to estimate poverty, inequality, and poverty profiles from imputed expenditures/incomes. These recommendations are summarized in Yoshida et al. (2015, 2022).

This paper presents the results of a pilot for using SWIFT in the COVID-19 High-Frequency Phone Survey (HFPS) to track poverty, inequality, and poverty profiles during the Pandemic and its recovery. The World Bank launched the COVID-19 HFPS series worldwide to address the need for frequent and up-to-date data to monitor the effects of the COVID-19 Pandemic. Because of lockdowns and other virus containment measures in many countries, phone interviews were adopted instead of face-to-face interviews. These phone interviews collect information on various socio-economic conditions, including food security, employment, social assistance, health, education, and market access, among other things. However, due to the short interview time, household expenditure/income is not collected, making it impossible to directly measure monetary poverty, inequality, and the profiles of the poor. To fill this important gap, several countries joined a pilot using SWIFT in the COVID-19 HFPS to track poverty, inequality, and poverty profiles.

However, producing reliable poverty estimates from phone surveys during a big crisis is known to be difficult. First, phone ownership is biased toward the rich and the non-poor in many developing countries. As a result, data collected via the COVID-19 HFPS likely have a pro-rich bias, resulting in a severe underestimation of poverty. Second, SWIFT's imputation models are trained with the past data, but a large crisis, like the COVID-19 Pandemic, can change the relationship between household expenditures/incomes and variables on the right-hand side of the model. This issue is called "model instability," which can make poverty and inequality statistics imputed by the models severely biased. Third, there is no empirical evidence that SWIFT can produce reliable inequality statistics and poverty profiles.

This paper shows SWIFT overcomes these challenges by modifying its estimation procedure. First, SWIFT uses a new sampling adjustment procedure that combines propensity score weighting with post-stratification to correct the sampling bias due to phone ownership and nonresponses. Zhang et al. (2022) present empirical evidence that this procedure eliminates the sampling bias and corrects the bias in poverty estimates produced by SWIFT. Second, SWIFT adopts a new model training process where a model is trained with multiple "fast-changing" variables that respond to shocks and other changes in the living conditions quickly. Yoshida et al. (2022) present empirical evidence that including such fast-changing variables in an imputation model significantly reduces the risk of model instability. Third, to fill the evidence gap, this paper produces empirical evidence that SWIFT can produce reliable estimates of inequality and poverty profiles.

Lastly, this paper provides the first results of this pilot, focusing on Saint Lucia, Ethiopia, Rwanda, Somalia, and Zimbabwe. Data from the southern rural region of Malawi is also included. The data were collected through an in-person survey called Rapid and Frequent Monitoring System, which is also collected frequently during the Pandemic. Results confirm that all countries experienced substantial poverty increases during the Pandemic. For Saint Lucia, where SWIFT has been used to estimate poverty multiple times since the COVID-19 outbreak, estimates show a spike in poverty at the beginning of the Pandemic, followed by a gradual recovery. The impact on inequality varies – rising in some countries and declining in others. Comparisons of poverty profiles between the poor and the national average population show that the poor suffered from food insecurity and employment losses but did not always fare far worse than the national average, suggesting the impact of COVID-19 has been widespread. Social assistance has generally been pro-poor, but with some signs of slow adjustment to reach those who have fallen into poverty since the start of the Pandemic. Together, this data provides a more nuanced picture of how the Pandemic has affected poverty and inequality.

Beyond helping to provide much-needed poverty and inequality data during the COVID-19 Pandemic, this pilot also shows great promise for obtaining frequent poverty statistics in the future. In contrast to traditional poverty data, which is calculated from expenditure/consumption

data collected in large household surveys conducted two or more years apart, using SWIFT could allow countries to track poverty on a quarterly or even monthly basis.