# Testing the Progress Out of Poverty Index:

## Triangulation of the PPI® with Key Informant Wealth Ranking Exercises and SILC Financial Diaries Data

Expanding Financial Inclusion Project
Catholic Relief Services
Kasama, Zambia

*August 2017*

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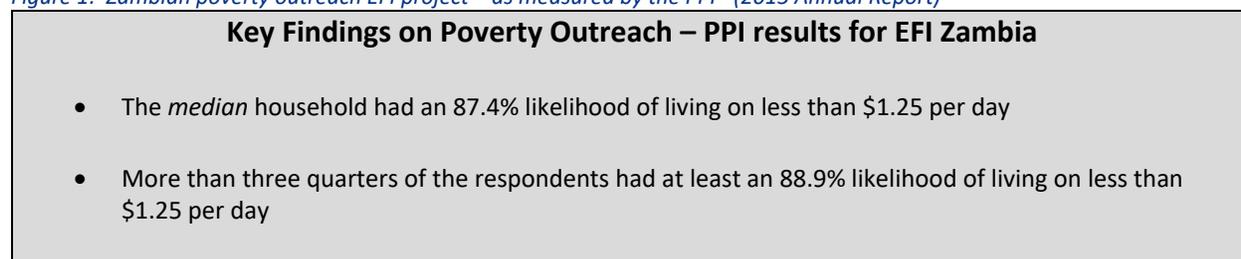
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# Introduction

Catholic Relief Services (CRS), with Microfinance Opportunities (MFO), conducted a comparative exercise to test whether the Progress out of Poverty Index® (PPI) was sensitive enough as a measure of relative poverty for the objectives and purposes of the Expanding Financial Inclusion in Africa Project (EFI).  In Northern Zambia, many respondents to the PPI surveys carried out under the EFI project had the same high poverty likelihood scores, yet the Financial Diaries data for the same households suggested real differences in their poverty levels.

Developing a third source of data on the socio-economic situation of the Financial Diaries' households in the form of a wealth ranking exercise allowed a triangulation of PPI data, Financial Diaries income data, and wealth ranking categories. The wealth ranking exercise also allowed an assessment of the extent to which there was an overlap between the indicators mentioned by the Financial Diaries' enumerators during the wealth ranking exercise and those indicators used in the PPI questionnaire in case discrepancies pointed to PPI question criteria that were not relevant in this context.

# Background and Methodology

A main objective of CRS' EFI project has been to improve the poverty outreach of the Savings and Internal Lending Communities (SILC) that it promotes.   EFI has rethought and restructured the SILC model to make it more pro-poor and a key way in which the EFI project has measured poverty outreach has been through the poverty measurement tool called the PPI, a ten-question survey instrument developed from national living conditions survey data.  The PPI is necessarily a compromised tool since it is low cost and quick to administer compared to large scale household surveys; the results measure a probability of poverty for households and groups of households.  The results from the PPI survey for EFI in Zambia suggested strong poverty outreach.

*Figure 1:  Zambian poverty outreach EFI project – as measured by the PPI® (2015 Annual Report)*

**Key Findings on Poverty Outreach – PPI results for EFI Zambia**

- The *median* household had an 87.4% likelihood of living on less than $1.25 per day

- More than three quarters of the respondents had at least an 88.9% likelihood of living on less than $1.25 per day

However, doubts about the PPI's accuracy arose from a 2015 mid-term review of EFI that criticized the PPI as insensitive and recommended wealth ranking exercises instead.  The EFI project was fortunate to have, for 255[1] households in Northern Zambia, not only PPI data but also a further - and highly detailed

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[1] There were 270 households in the Financial Diaries Study but reliable PPI surveys exist for only 255 households

– data set collected for a Financial Diaries study[2].  The results of the Diaries and PPI data could, therefore, be compared.

Finally, to provide a third source of data for comparison, the EFI researchers undertook a wealth ranking exercise with the 14 Financial Diaries enumerators who had lived in the Diaries' villages and recorded data from a fixed set of 20-25 households over the 24-month diary period[3].  These enumerators had a unique in-depth understanding of the households' socio-economic situation.  Comparing the SILC group members with the wider community, the enumerators were asked to put the households they knew into one of four categories: Well-Off, Managing, Poor, and Very-Poor.

# Main Findings[4]

## The wealth ranking produced four clear socio-economic groupings

The enumerators grouped 15.6% of households into the Well-Off category, 41.6% into the Managing and 29.8% into the Poor category, with only 12.9% into the Very Poor category.   The descriptions the enumerators provided and the Financial Diaries data show that, although the majority of these households are living below the International Poverty Line, there are notable differences in livelihoods, assets, and overall quality of life

*Figure 2: Proportion of Households in Wealth Ranking Categories*



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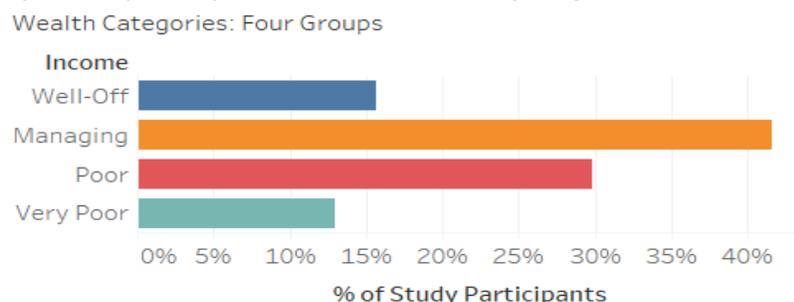
[2] The Financial Diaries study ran from October 2014 to September 2016 to investigate financial tool use and resilience. Enumerators collected weekly household level data on cash, barter, in-kind, and financial transactions.

[3] The Financial Diaries FOs had each spent two years living in the villages where research was performed, interviewing between 20-25 households every week.  Through their two-years of data collection, observation and integration into their respective communities, they developed deep familiarity with the situation of the households and of the villages.  The approach had the advantage of being relatively cost and time effective as each FO could provide unique 'expert' advice on 'their' households and villages.

[4]  For the sake of brevity, the wealth ranking labels are used as shorthand in this report: so, 'Very Poor' stands for 'those households categorized as very poor in the wealth ranking exercise', 'Well-Off' stands for 'those households categorized as well-off in the wealth ranking exercise' and so on.

### PPI data approximately matched the wealth ranking

When we compared the PPI and wealth ranking results, we found that the PPI data followed the same trend as the four wealth groups: the Well-Off households had the lowest poverty likelihood with 76.2%[5], the Managing had a likelihood of 83.5% and the Poor and Very Poor households had the highest (90.3% and 90.6% respectively).[6]

*Table 1 Wealth categories and Average PPI likelihood*

| Wealth Category | Percent of Households | Average PPI® Likelihood |
|---|---|---|
| Well-Off | 15.6% | 76.2% (1.93)* |
| Managing | 41.6% | 83.5% (1.71)* |
| Poor | 29.8% | 90.3% (1.20)* |
| Very Poor | 12.9% | 90.6% (1.04)* |
| Total | **100%** | 85.3 (1.61)* |

*Numbers in brackets are standard errors

### Gap between PPI scores and the socio-economic situations described in the wealth ranking

Even though the PPI conflates the categories, the wealth ranking groupings generated descriptions of quite different socio-economic situations in terms of diversity of livelihood strategies, incomes, assets and other poverty differentiating criteria between the Well-Off/Managing households on one side and the Poor/Very Poor on the other. In **Table 2** below, the row describing income captures the differences, from 'multiple and reliable income sources' to 'earn very little income' as the columns move left to right from Well-Off to Very Poor.

*Table 2 Wealth Ranking – Description of the four socio economic categories of households*

| CRITERIA | WELL-OFF 15% | MANAGING 42% | POOR 30% | VERY POOR 13% |
|---|---|---|---|---|
| Income | Multiple and reliable income sources | Fairly consistent but can run out of money on occasion | Income is inconsistent. No stable flow of income. More likely to barter | Earn very little income |
| Livelihoods | Well capitalized and diversified businesses, salaried jobs; High investment and consequently very productive farming | Like the Well Off in many respects but with less capital and livelihood diversity; more skilled piecework; can afford | Lack capital and business skills; rely on piecework; small scale and fragile businesses; struggle to buy farming | No capital, do piecework[7] or tiny and erratic businesses; very limited and input-poor agriculture |

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[5] The Progress out of Poverty Index is a poverty measurement tool that uses the answers to 10 questions about a household's characteristics and asset ownership to compute the likelihood that the household is living below different national and international poverty lines.

[6] In October 2015 the World Bank updated its international poverty line to $1.90 (PPP) based on 2011 prices. We use the older $1.25 line because the PPI poverty likelihood conversion tables use this line.

[7] 'Piecework' refers to short term and casual labor, often seasonal and agricultural in nature. Terms and conditions vary by the level of skill or strength required and payment may be measured by output (e.g. bricks made or rows of maize weeded or harvested, or a field prepared in ridges) or by the time spent carrying out the work. Rates often vary for men, women and children according to the task. Payment may be in cash or, sometimes, in kind.

| | | inputs and crop diversity | inputs; farm smaller areas | |
|---|---|---|---|---|
| **Assets** | Many and varied, some are productive; own more land | Good asset base but less than well off and fewer high end assets; some own land, others rent land for cultivation | Few assets or belongings; some own land and many rent land for farming | Almost no assets or belongings; some rent homes and some own homes; some rent land and some own land for farming |
| **Housing** | Good quality, large. | Well built, somewhat smaller than WO or works in progress | Small, traditional and ill repaired houses | Small, traditional and ill repaired houses |
| **SILC** | Make good use of savings, loans and invest share-out in productive activities. Use the most financial tools | Make good use of the financial tools, invest in businesses. Do piecework as a strategy only to start saving | Struggle to save, miss meetings, take fewer loans and are more likely to default or be late in repayment. Use share outs for consumption (food and small assets) | Erratic and low savings, take none or small loans, some cannot repay loans, joined in the hope of a hand out |

## The Financial Diaries income data matched the wealth categories from the Wealth Ranking

The next step was to compare the wealth ranking categories, the PPI likelihood scores, and the average income per person per day data from the Financial Diaries. These data suggest a general alignment of all three data sources: all three data sources show the Well-Off better off than the Managing, and those two categories better off than the Poor and Very Poor. Furthermore, the data suggest an alignment between the Diaries data and the PPI data regarding the Managing, Poor and Very Poor categories: both data sources show very similar likelihoods of being poor for each category.

For example, according to the PPI, households in the Managing category had an 83.5 percent likelihood of being poor while the results from the Diaries suggest that 86.8 percent of households in that category were *actually* poor given their per capita and per day spending.[8] The PPI actually under predicted the poverty likelihoods for the Poor and Very Poor; both of these categories had roughly 6% more households living on less than $1.25 per day than were predicted. However, the same PPI over predicted the poverty likelihood for the Well-Off - only 60% of the Well-Off households lived on less than $1.25 per day, 16% less than the predicted 76.2%.

These data, and a closer look at the data in **Table 3**, highlights the issue that initially led the team to look at the PPI more closely, namely the lack of sensitivity of the PPI to differences across households that are, generally, highly likely to be poor. This is most apparent in the per capita/per day expenditure gap between the Managing and Poor households. The Managing category spent, on average, 1.6 times what the Poor households spent, but the difference in the PPI scores did not reflect this large spending gap—the two categories' scores were only seven percentage points apart.

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[8] There were very few households in the very poor category and this means that a few households not living on less than $1.25 per day skewed the results.

*Table 3: Poverty Likelihoods, Earned Income, and Households Living on Less than $1.25*

| Wealth Category | Percent of Households | Average PPI® Likelihood | Average Net Expenditure Per Person Per Day | % Living on Less than $1.25 |
|---|---|---|---|---|
| **Well-Off** | 15.6% | 76.2% | $1.18 | 60% |
| **Managing** | 41.6% | 83.5% | $.72 | 86.8% |
| **Poor** | 29.8% | 90.3% | $.45 | 96.4% |
| **Very Poor** | 12.9% | 90.6% | $.47 | 97% |
| Total | **100%** | **85.3** | **$.68** | **87%** |

This does not necessarily reflect a technical problem with the PPI, but, rather, a problem with its usefulness in programs that are concerned with the **depth** of poverty outreach in situations where almost everyone is poor. The PPI cannot easily distinguish between groups of people who are, on average, living at or below 40 percent of the poverty line (the Poor and the Very Poor in the Zambia Diaries data) and those, on average, living at or below 60 percent of the poverty line (the Managing group). This does not seem to be due to a problem with the scoring—the PPI scores of the participants in the Diaries study had a fair amount of variation and were not uniformly low. Rather it seems to be a problem related to the fact that $1.25 PPP per capita per day is still a lot of money for the poor and people survive on much less. As a result, people with a variety of scores still had a high likelihood of falling below poverty.

One simple solution to this problem is for the PPI lookup tables to include a table that relates the PPI scores to the likelihood of falling below certain percentages of the international poverty line. This is especially important given that that poverty line was raised in 2016 to $1.90 PPP—our Diaries data suggest that the lookup tables should include both a 50 percent and a 25 percent of the poverty line table.

A closer look at the data suggest there may be a more fundamental problem with the PPI. The likelihood score is not a continuous variable. Rather, the look-up tables organize households into categories with associated poverty likelihoods related to the raw score on the 10-question PPI questionnaire. One would expect that, on average, households falling in the higher likelihood categories would have lower per capita expenditures, and, generally, the relationship would be linear—the higher the poverty likelihood according to the PPI, the lower the per capita expenditure.

The graph below maps the relationship, showing for each mark the number of households in each poverty likelihood category and the poverty likelihood percentage. Generally, the graph slopes from left to right, which is what one would expect—as the poverty likelihood decreases so per capita expenditure increases. But the devil is in the details—the line zig-zags down from left to right showing a number of situations where those in a lower poverty likelihood category had a lower per capita expenditure. In particular, even though there is a dramatic increase in per capita expenditures for the 39 households having a 94.8 percent poverty likelihood in comparison to the 11 having a 97.9 percent likelihood, there is a drop in per capita expenditures from those households with a 94.8 percent likelihood to the 36 households with an 80.1 percent likelihood.

## PPI Likelihood vs. Per Capita Per Day Expenditure
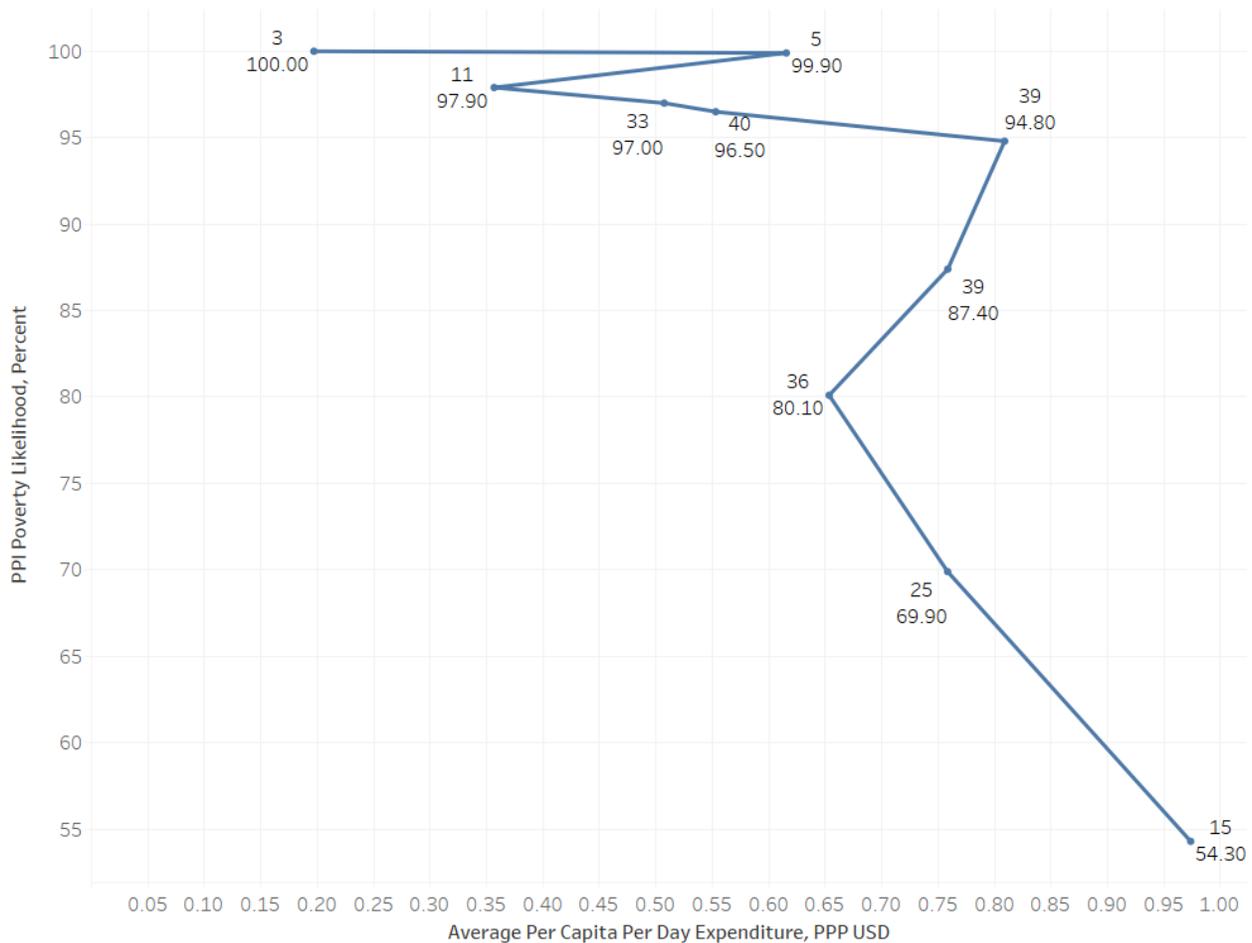


It may be the case that the PPI is giving the impression of more precision than it is capable of—it can generally rank people at levels of poverty likelihood, but the idea that it can accurately measure whether a household is 97.9 percent or 94.8 percent likely to be poor is not supported by the Diaries data. This suggests that, along with including look-up tables for 25 and 50 percent of the poverty line, the look-up tables should have much larger likelihood categories than it does now (maybe 100 to 90 percent, 89.9 percent to 80 percent, etc.) to ensure that users do not place too much confidence in the precision of the index.

Finally, the data regarding the Well-Off category suggest a discrepancy between the PPI poverty likelihood and the Diaries data. According to the PPI, that group had a 76 percent likelihood of being poor, while the Diaries data suggest that only 60 percent of them were, in fact, poor. One reason for this is that this group tended to spend, on average, more than they earned—their net per capita income per day was 77 cents, and on the basis of this income measure, 80 percent of the households in the Well-Off category were earning below $1.25 PPP per capita per day.

The Well-Off category's income was about 40 cents per capita per day less than their expenditures. They were able to make up the difference between income and expenditures with cash transfers from family and friends. This highlights a point of caution—the PPI score may not always serve as a good proxy for

expenditure-based poverty because the household may have access to resources that somehow are not reflected in the variables that the PPI uses. For example, a household that relies on cash transfers may not have the assets that a household that earns more money has, because the former have less control over the money they have than the latter—the former get external cash transfers when they need them and otherwise scrape by, which does not give them much opportunity to accumulate assets. More research needs to be done on this issue.

# Discussion and Recommendations

Overall, the PPI tracked broad trends in poverty in the Financial Diaries population.  While acknowledging the tradeoffs necessary to develop a low cost and simple poverty measurement tool, the PPI appears to struggle to differentiate among households that are almost all living below the poverty line. This insensitivity may be because the PPI aims to cover all regions of Zambia, including urban areas, even though there are considerable differences in how urban and rural people live.

This insensitivity to differences in poverty has two major programmatic consequences. First, it suggests that the PPI should not be used for targeting when the goal of targeting is to extend the **depth** of outreach among the poor, not simply to reach the poor. This suggests that the PPI should be complemented with other tools in future, which tools would depend on the objectives and the budget.[9] Second, the data presented in this report suggest that the PPI should not be used to measure progress from one level of poverty to another—it should not be used to measure progress *within* poverty, but only more general progress *out of* poverty—because the PPI is not precise enough to determine whether a group of households' poverty had really changed over time.

There are efforts underway to retool the PPI to take into account the issues raised in this report. Specifically, these efforts are focusing on making the PPI more context-sensitive and doing away with the false precision of overly narrow poverty likelihood categories at the very lowest levels of poverty. These are welcome, because the PPI remains a useful tool that, if used in the right way, can help organizations target the poor and measure progress *out of* poverty.

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[9] The PPI guidance advises that greater sensitivity can be achieved by combining tools but does not advise against only using the PPI for targeting