



A validity assessment of the Progress out of Poverty Index (PPI)TM



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ABSTRACT

Development organisations need easy-to-use and quick-to-implement indicators to quantify poverty when requested to measure program impact. In this paper we assess the validity of the Progress out of Poverty Index (PPI)TM, a country-specific indicator based on ten closed questions on directly observable household characteristics, by its compliance to the SMART criteria. Each response receives a pre-determined score, such that the sum of these scores can be converted into the likelihood the household is living below the poverty line. We focus on the PPI scorecard for Rwanda, which was validated using two national household surveys conducted in 2005/06 and 2010/11. The PPI is Specific, Measurable, Available cost effectively, and Timely available. Yet, its Relevance depends on the way it is used. Although it accurately distinguishes poor from non-poor households, making it a useful reporting tool, its limited sensitivity to changes in poverty status restricts its usefulness for evaluating the impact of development projects.

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1. Introduction

Development programs with the objective of poverty alleviation want to target the poorest households, but lack resources, time and expertise to develop their own detailed poverty measures or conduct full-scale household surveys. Consequently, such development programs rely on standardized indicators to measure poverty and evaluate the impact of their program. Ideally, such indicators are designed according to the SMART criteria¹: *Specific, Measurable, Available cost-effectively, Relevant and Timely available* (European Evaluation Network for Rural Development, 2014; Poister, 2008). The Progress out of Poverty Index (PPI)TM, introduced by the Grameen Foundation, is promoted as a tool that can quantify the share of program participants living below the poverty line, assess the performance of the intervention among the poor and poorest, and track poverty levels over time.² By design, the PPI meets four of the five SMART criteria. It is Specific, Measurable, Available cost-effectively, and Timely available. The Relevance criterion, however, requires validation. Assessing this validity is the objective of this paper.

1.1. Background

In order to be able to more accurately value the merits and shortcomings of the PPI, we provide a brief overview of alternative ways to measure poverty, paying particular attention to the extent to which these measures comply with the SMART criteria.

Consensus appears to have been reached on the vision that poverty is multidimensional. However, such consensus does not exist on the best way to measure poverty, evidenced by the large and growing number of poverty indicators. The most frequently used poverty indices are income- or expenditure-based (Ravallion, 1996). Of these, perhaps the most well-known are the dollar-a-day extreme poverty line and the more generous two-dollar-a-day poverty line developed by Ravallion, Datt, and Walle (1991) for the 1990 World Development Report. Households are considered poor when their income or total expenditure falls below a certain threshold. A downside of income and expenditure-based poverty indices is that data collection is costly, extremely time-consuming and prone to measurement error (Beegle, De Weerd, Friedman, & Gibson, 2012; Deaton, 1997). For example, the food expenditure part of the 2005/06 Rwanda Household Living Standard Survey counted 75 pages and required enumerators to visit each household 11 times (Schreiner, 2010). Hence, expenditure-based poverty indicators are neither *Available cost effectively* nor *Timely available*, which are key SMART principles for successful implementation by development programs.

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¹ Several definitions of SMART have been developed. We follow the definition as proposed by the European Evaluation Network for Rural Development of the European Commission (<http://enrd.ec.europa.eu/en>, accessed April 2014).

² <http://www.progressoutofpoverty.org/>.

Additional shortcomings of income and expenditure based poverty measures are the difficulty of accurately defining a line below which people are poor and above which they are not (i.e. quantifying the poverty lines) and their inherently static nature (Carter & Barrett, 2006). Most income-based measures are static in nature as they measure only if a household (or individual) fails to meet minimum income levels to cross a predefined poverty line. Yet, some households – the so-called transient poor – live from an income below the poverty line at a particular moment in time, but have sufficient productive assets to escape poverty, while structurally poor households lack the resources to move out of poverty over time (Barrett et al., 2006; Baulch & Hoddinott, 2000). Development programs with the aim of alleviating poverty in the long term should be especially concerned about these structurally poor households and thus require a poverty measure that allows their identification (Barrett, 2010). Hence, the *specificity* of expenditure-based indicators can be questioned.

Asset-based approaches to poverty measurement have been proposed to distinguish the structurally poor from the transient poor (Carter & Barrett, 2006). Besides being more cost-efficient and less demanding in terms of data requirements, this approach is robust to small fluctuations in poverty levels and, therefore, might be able to capture the structural component of poverty (Adato, Carter, & May, 2006; Barrett et al., 2006). Several asset indices are already extensively used. A distinction can be made between those that use a theoretical and axiomatic framework and those that are primarily data-driven.

Of the indicators using a theoretical and axiomatic framework the Human Development Index (HDI) and the Multidimensional Poverty Index (MPI), both developed by the UNDP, are among the most frequently encountered (UNDP, 2010). The MPI is a weighted average of three pre-defined dimensions of poverty – education, health and standard of living- and can be decomposed into poverty headcount and intensity (Alkire & Santos, 2011). For each dimension several sub-indicators are included. A household is considered multidimensionally poor if it suffers deprivation in at least 33% of the weighted sub-indicators (Alkire & Santos, 2011). These indices were specifically developed to compare poverty between countries and over time and perform quite well in that context (Alkire & Santos, 2014). However, they might not be sufficiently sensitive to changes in poverty rates in specific local contexts, which casts doubt on their *Relevance* for use in development programs. For such programs, the indicator developed by Zeller, Sharma, Henry, and Lapenu (2006) might be more useful. This indicator, like the MPI and HDI, has a theoretical basis but was developed to assess to which extent a policy or program reaches the poorest. A downside of this indicator is its reliance on principal component analysis (PCA), which makes it decidedly less easy-to-use and, thus, violates the *cost-effective Availability* criterion.³

The second group of poverty indicators does not use theoretical justification to select assets but selects assets solely on their statistical relationship with poverty. Because of their data-driven nature, these indicators are country-specific. Two frequently used indicators in this group are the Poverty Assessment Tool (PAT) and the Progress out of Poverty Index (PPI). They do not exist for all countries yet, but are under continuous development. The PAT has been developed by USAID (2014) and its use is mandatory for many USAID funded projects, while the PPI grew out of a microfinance initiative in Bosnia–Herzegovina (Matul & Kline, 2003) and was further developed by Mark Schreiner of Microfinance Risk Management L.L.C and the Grameen Foundation. At the time of writing, the PPI was available for 46 countries and used by 176 organisations, mostly in the sphere of microfinance, including *Oiko Credit*, a

financial cooperative supporting microfinance initiatives worldwide, and *Dia*, an organisation supporting MFIs in India (Grameen Foundation, 2014a, 2014b). Both tools are similar in many respects, although the PAT is slightly more accurate and the PPI more widely available (Schreiner, 2014). Neither of the indicators is frequently encountered in the academic literature, although the PPI has been used to assess program impact (Blauw & Franses, 2011; Larsen & Lilleor, 2013) and as a benchmark indicator (Dinh & Zeller, 2010).

As many organisations are interested in using PPI in program evaluation and impact, an independent evaluation of how SMART it is as an indicator for poverty, and the extent to which it can be used for targeting the poor and monitoring and evaluating development programs is highly relevant for policy makers and development professionals.

The PPI has been developed with the specific aim to measure poverty at household level in a particular country. Moreover, the tool has been designed to provide a cost effective and timely available proxy for poverty. Hence, the SMART principles *Specificity*, *Measurability*, *cost-effective Availability* and *Timely availability* are clearly met. The *Relevance* criterion, however, cannot be accurately assessed without validation. We distinguish two important, but different aspects of the *Relevance* criterion: the ability of the indicator to distinguish poor from non-poor households regardless of where they live and the sensitivity of the PPI to changes in poverty over time. The first point is important for targeting and reporting, while the second point is crucial for the indicator to be useful for monitoring and evaluation.

In this paper we analyse the PPI based on data from Rwanda, which is particularly well-suited to assess the relevance of the PPI for two reasons. First, the PPI has been calibrated on a household survey conducted in 2005/2006 and a similar household survey has been conducted in 2010/2011. This ensures that we have perfectly comparable data. Second, in the 5-year interval between survey rounds the country has experienced considerable economic growth, creating changes in poverty rates (Ansoms & Rostagno, 2012). This is a necessary condition to assess the sensitivity of the PPI to changes in poverty rates over time.

In the next section we briefly explain how the PPI is constructed. Then, we outline the methodology and describe the data used to examine the validity of the PPI. In the results section we show that poverty estimates based on index scores corresponded well to official poverty rates and that the index was useful for reporting and targeting. Furthermore, we show that its sensitivity to changes in poverty over time depended crucially on a limited set of items; most items were stable, and did not change over time. In the final section the implications of these findings are discussed.

2. The progress out of poverty indicator

PPIs have already been developed for more than 50 developing countries.⁴ Their development is always based on detailed household-level data such as captured by the Living Standards Measurement Surveys of the World Bank or national household surveys and the methodology is standardized (Schreiner, 2010). First, out of the household-level variables in the survey, a pre-selection of 100 indicators in the area of family composition, education, housing, and durable goods is made. Out of these, ten are selected that have a high correlation with poverty measured by the uncertainty coefficient (Goodman & Kruskal, 1979), are inexpensive to collect, easy to answer quickly, simple to verify, and liable to change over time as poverty status changes (Schreiner, 2010). These ten items are given weights using logistic regression, such that final scores on the index range from 0 to 100. A scorecard is produced which allows users to calculate scores on

³ In the same vein is the asset index promoted by Sahn and Stifel (2000, 2003). They construct poverty-sensitive asset indices using factor analysis, a methodology comparable to PCA.

⁴ <http://www.progressoutofpoverty.org/>, accessed April 2014.

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