



# A place for panel data in the 'data revolution'

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## Key messages

- Poverty reduction worldwide is often accompanied by frequent movements in and out of poverty, the great vulnerability of the near-poor and the persistence of groups of people who are chronically poor.
- Identifying and measuring trajectories in and out of poverty requires the use of panel survey data, which can also establish what is driving the movements of households into and out of poverty over time.
- The systematic and widespread use of household panel data can provide important insights into the causes of poverty and, consequently, the policies needed to 'get to zero' on extreme income poverty by 2030.
- Many countries could develop a panel survey by 2016 by building on good quality national household surveys that already exist.

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This briefing paper advocates for the systematic and widespread collection and use of household panel surveys to monitor progress and inform policy making around the first Sustainable Development Goal (SDG) – end poverty by 2030. It argues that panel data could generate invaluable insights on whether

poverty eradication interventions are working or not, for whom they are working or not, and why. Importantly, they could be used to monitor whether anyone is being 'left behind' and in what circumstances. This information would greatly improve the design and targeting of poverty reduction policies.

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International discussions around the post-2015 agenda and the Sustainable Development Goals (SDGs) have generated unprecedented interest in the types of data that are needed to monitor progress and inform policies. There are mounting calls for a ‘data revolution’ to generate more and better quality data that are used systematically to inform and evaluate policies and promote accountability to citizens.

This briefing paper argues that more systematic and widespread use of household panel surveys – that is, surveys that track the same individuals or households over time – can provide important insights into the nature of poverty and who is being left behind and, consequently, inform the policies needed to ‘get to zero’ extreme poverty.

## Panel data provide key insights into income poverty and vulnerability

While some regions are lagging behind on poverty reduction, the world, as a whole, has achieved the Millennium Development Goal (MDG) target of halving extreme income poverty. This achievement means that for every 100 people living in extreme poverty in 1990, today there are, at most, 50 extremely poor people. The implication is that 50 people, or more, have made a permanent escape from extreme poverty since 1990. However, this is not necessarily the case. It could be that

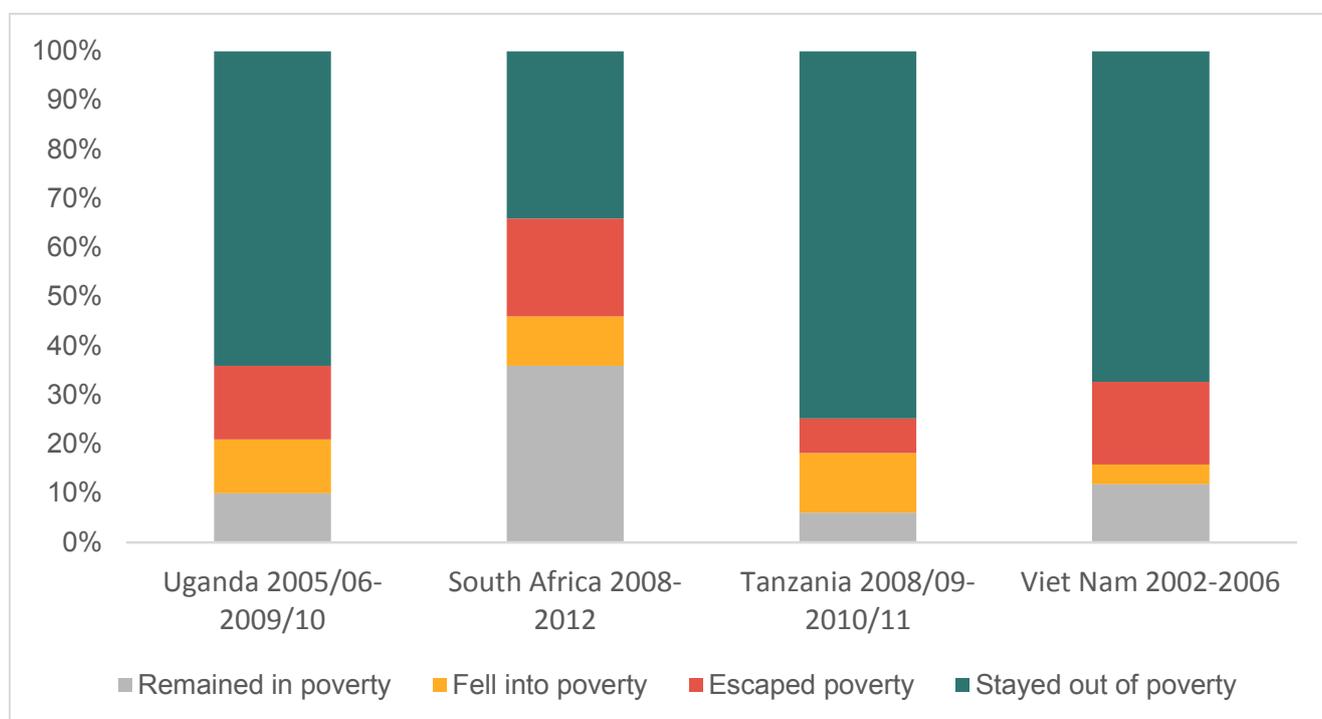
10 people slipped into poverty while 60 people escaped from it. Or it could be that 50 people fell into poverty while 100 people succeeded in moving above the poverty line. In the majority of countries, we simply don’t know.

What we do know, where data from household panel surveys are available, is that the proportion of people falling into poverty, escaping poverty and remaining in or out of poverty over particular periods varies markedly in different contexts (Figure 1).<sup>1</sup>

By tracking movements into and out of income poverty, panel data tell a more nuanced and sometimes different story than the one told by the repeated cross-sectional (one point in time) surveys that are used to calculate the proportion of the population living in poverty – the poverty headcount ratio. This is because panel surveys capture the fortunes of particular households at different points in time, and these can vary depending on the events and processes that affect those households, as well as the changing context around them.

Even when the stories told by different types of surveys differ, they need to be seen as complementing each other, with regular household surveys, such as the Living Standards Measurement Survey (LSMS) being better at revealing the incidence of a phenomenon and tracking progress, and panel surveys providing insights into ‘poverty dynamics’ – movements into poverty, out of poverty or of failures to rise above the poverty line.

**Figure 1: Understanding poverty dynamics**



*Estimations are obtained using national poverty lines.*

*Source: drawn from existing analysis of nationally representative household panel surveys.*

<sup>1</sup> Note that the figures are not an estimate of the incidence of poverty in the period examined.

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## Four ways in which an understanding of poverty dynamics matters

1. **Different poverty trajectories require different types of policies.** Without knowledge of poverty dynamics in each country we risk prioritising policies and programmes that may not be the most effective. In particular, the policies that are needed to enable people to escape poverty differ markedly from those that aim to stop them falling into it (Shepherd et al., 2014).

2. **There may also be a group of people who are persistently poor and who remain trapped in poverty year after year.** Panel data are crucial to show if this is the case and, if so, who is being left behind. Analysis of the US Panel Study of Income Dynamics, for example, reveals that 72% of black Americans living in neighbourhoods that are predominantly black and among the poorest in the country were raised by parents who, in the 1970s, themselves lived in such a ghetto: ‘the ghetto appears to be inherited’ (Sharkey, 2008). This matters because chronically poor people require particularly intensive and wide-ranging support to tackle the multiple disadvantages they face.

3. **Frequent movements into and out of poverty indicate variability in income and vulnerability.** They may signal that any observed progress on the proportion of people living in poverty is unlikely to be sustained unless measures are taken to reduce household exposure to shocks and build resilience.

4. **Temporary descents into poverty can have long-term negative effects on other dimensions of human development.** Families may, for example, reduce their food consumption or parents may withdraw their children from school during periods of hardship.

## The value added of panel data

Panel data analysis not only enables investigation of the incidence of different poverty trajectories, it also helps to identify the factors that drive those trajectories. By observing the same individuals or households over time, panel data can track the changes in behaviour or circumstances that are associated with particular poverty trajectories – something that cross-sectional data cannot do. For example, panel data make it possible to analyse the assets that enable particular households to escape poverty or the circumstances that make them more vulnerable to falling into poverty.

Panel data also enable stronger claims about causality to be made than analysis of cross-sectional data. This is because the econometric analysis of panel data, unlike that of cross-sectional data, can control for the unobserved, time-invariant characteristics of households, as sample households do not change from one point in time to the other (May et al., 1999; Finkel, 2008).

This means that panel data can be used for the ex-post impact evaluation of policies and programmes (Khander et al., 2010). In Brazil and South Africa, panel data confirmed the findings from other studies concerning the important role of non-contributory pensions in sustaining improvements in well-being among older

people (Barrientos and de la Vega, 2011). In South Africa, analysis of the KwaZulu-Natal Income Dynamics Study (KIDS) demonstrated the positive impact on early childhood nutrition of the unconditional Child Support Grant (Aguero et al., 2007).

The use of nationally representative panel data to evaluate social programmes also avoids problems of endogenous programme placement (e.g. poverty eradication interventions that are targeted only to areas with high levels of poverty) and selective migration (poor people moving to areas better served by social programmes, as described in Houghton and Khander, 2009). This approach to programme evaluation also has some advantages over randomised control trials (RCTs). For example, it avoids the need to randomise treatment (the random selection of households to be included in the programme to be evaluated), which may be particularly unethical in the context of anti-poverty interventions. It also enables researchers to draw on larger and more representative data sets than those used for RCTs, thus enhancing the external validity of the findings. The risk of placebo effects, whereby participants change their behaviour because they know that they are part of a treatment group in a trial, is also reduced (OECD, 2013). Of course, RCTs remain preferable in certain circumstances and may be the only option where, for example, the survey questionnaire or the panel survey sample are inadequate to answer the crucial policy questions.

## Panel data analysis already informs national policy making

### It has played a key role in the development of new approaches to chronic poverty and advocacy for those being left behind

Nationally representative panel data are one of the few sources of information on whether certain people are being left behind by social and economic development, particularly during periods of national progress. The UK’s Action Plan on Social Exclusion (2006), for example, drew on evidence from the British Household Panel Survey (BHPS). Analysis of the BHPS revealed that, despite a national picture of success, a small group of people experience particularly persistent and severe deprivation and exclusion throughout their lifetime. The resulting Action Plan argues that tackling such marginalisation requires highly localised and tailored responses that cut across government departments.

In Uganda, panel data have been instrumental in providing the evidence that existing policy approaches are not benefiting everyone. During the 1990s, Uganda experienced significant reductions in monetary poverty and made strong progress on a number of macroeconomic indicators. Despite this impressive performance, however, analysis of national panel data showed that between 1992 and 1999, 19% of the population had remained trapped in poverty (Lawson et al., 2006). This was crucial information

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for proponents of social protection, who used it to advocate for cash transfers to improve the living conditions of the poorest people who were being left behind, and the Government of Uganda responded with a large scale pilot social protection programme (Hickey, 2003).

### **It has promoted the development of life-cycle approaches to tackle deprivation**

Depending on how long the tracking of individuals continues, panel data enable us to see what happens to children as they move through their childhood, into their youth and onwards into adulthood. If people are first visited during their adulthood, the data provide insights into the fortunes of working adults as they move in to old age. By pinpointing the times in life when deprivation is most likely to start to become entrenched, policies and interventions can be designed to prevent its causes rather than to treat the outcomes. Tracking children over a 13-year period in Tanzania, for example, has shown that maternal orphanhood has a long-term impact on welfare through shortfalls in both education and nutrition for children (Beegle et al., 2010).

Analysis of the UK's BHPS highlights key periods in individuals' lives when different policy interventions could be targeted to break cycles of disadvantage, including during the early years of their lives. For example, the BHPS finding that the cognitive ability of bright children from poor backgrounds is overtaken by that of less able children from affluent backgrounds long before children enter school resulted in more than £500 million being allocated to build a programme of pre-school provision in the UK (Halpern, 2008).

### **It has highlighted the idea of 'churning' around the poverty line and made the case for policies to reduce vulnerability**

Panel data analysis for Indonesia shows that poverty reduction has been accompanied by frequent movements into and out of poverty. Analysis of three rounds of the Susenas panel shows that, between 2008 and 2010, over a quarter of all Indonesians were living in poverty in at least one round, while 43% fell below the official near-poor line at least once (World Bank, 2012). These findings reinforced the case for the expansion of social assistance coverage to both poor and 'vulnerable non-poor people'. This has become a priority in the National Medium Term Development Plan (RPJM) 2010-2014, which aims to expand coverage of Indonesia's five social insurance funds (World Bank, 2012).

### **Costs and practicalities**

Panel surveys need to be planned and prepared with care from the outset. In particular, decisions are needed on how the survey rounds will be run to ensure comparable information across the different waves of the survey. This includes deciding *who* to track (whether households or

individuals), whether migrants are to be followed, the types of information to collect to ensure that core questions are comparable across the rounds and how often to make repeat visits. GPS should be used from the first round to enable interviewers to re-visit the same households.

It is crucial that the findings of panel surveys are released in a timely manner so that they remain relevant to inform policies. A good rule of thumb is that fieldwork for the next round should not start until data from the previous round are in the public domain. Researchers and statisticians should engage with policy makers across ministries to disseminate the findings.

In addition, a successful panel survey requires a commitment to long-term funding and an acceptance that this investment will only start to produce its most significant results after the second and subsequent rounds have been completed. The costs of the early rounds of a panel survey, after the initial baseline survey, could be lower than those associated with setting up a new cross-sectional survey, where the costs of drawing-up a sample and re-listing enumeration areas are substantial. However, the costs of a panel survey are likely to increase over time, as more people begin to move and their households change, making it more difficult to track them.

The frequency of a national panel survey would vary depending upon the national context, including the resources, capacity and priorities of national statistics offices. Experiences to date on the implementation of nationally representative household panel surveys in low-income contexts show that a gap of 2-3 years is the most feasible for most countries. A shorter gap would make it difficult to analyse the results of the previous round and release them to the public in a timely way. A longer gap, however, would undermine the value of the survey's institutional knowledge and increase the problem of attrition, with the loss of individuals and/or households between survey rounds. It may be feasible, however, to track particular groups of people in the sample on a more frequent basis if needed, for instance after a particular shock to measure its impact.

One way to reduce the start-up costs of a panel survey could be to sample households already included in a previous nationally representative household survey. This existing survey would then constitute the first wave of the panel survey and would enable many countries to develop a panel survey as early as 2016.

### **Addressing the limitations of panel data**

The main weakness of panel surveys is that they become less representative of the population at large over time. This is because while the structure of a society changes over time, the sample of households included in a panel survey does not (Haughton and Khander, 2009). Whenever possible, panel surveys should be representative of regional or national populations – while recognising that the greater organisational demands of a panel may make it difficult to reproduce the quality of nationally representativeness of other types of surveys (e.g. LSMS).

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In monitoring the SDGs, therefore, panel surveys should not replace national cross-sectional household surveys, but rather be implemented in addition to them.

Attrition is another problem and can occur for a variety of reasons, including the death of participant, their migration or their refusal to take part. While the first is clearly beyond the control of the survey implementers, the second two can, to some extent, be managed. In instances where the household has moved, taking a phone number, the names of neighbours and the place of work can all help to track the household at a later date. Meanwhile, the burden on respondents can be limited by, for example, ensuring that the length of the survey is manageable, offering small gifts to respondents and ensuring that interviewers are well trained – all of which can increase response rates.

## Panel data in the post-2015 agenda

The systematic collection of data from nationally representative panel surveys could make a great contribution both to monitoring progress on the SDGs and to informing policymaking around their implementation, particularly on SDG 1: ‘get to zero’ extreme poverty by 2030.

First, panel data would provide vital information on whether poverty eradication interventions are working or not, for whom they are not working and why. Importantly, they could be used to monitor whether anyone is being ‘left behind’ and in what circumstances. This information would greatly improve the design and targeting of policies.

Second, panel data would generate information on how movements into and out of extreme income poverty are associated with advancements and set backs on other SDGs. This would, in turn, help to prioritise policies and reveal precisely where integrated interventions would be most useful.

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