

## The value of panel data in chronic poverty analysis



### What is Chronic Poverty?

The distinguishing feature of chronic poverty is extended duration in absolute poverty. Therefore, chronically poor people always, or usually, live below a poverty line, which is normally defined in terms of a money indicator (e.g. consumption, income, etc.), but could also be defined in terms of wider or subjective aspects of deprivation. This is different from the transiently poor, who move in and out of poverty, or only occasionally fall below the poverty line.

### Key points

- Panel (longitudinal) data is central to obtaining a better understanding of poverty dynamics and the persistence of poverty, and in informing the effective design, targeting, and implementation of anti-poverty policies.
- Panel data provide insights into the effects of economic and anti-poverty policies, and political changes on individuals, households, and groups over time. It can thereby enable the monitoring and robust evaluation of policy.
- Panel data can help policy makers identify the policies which facilitate escapes from poverty.
- Panel data can deepen our understanding of vulnerability and risk, and of the multidimensionality and inter-generational transmission of poverty.
- One of the frontiers of poverty research is how to make analysis of the dynamics of poverty and well-being more multi-dimensional. Integrating and sequencing life history and other qualitative methods within quantitative panel surveys provides a promising way to do this.



## Introduction

Up to 443 million people are now trapped in chronic poverty – poverty that they have experienced for many years, often their entire life, and which has irreparably damaged (or threatens to damage) their capabilities and those of their children. Tackling chronic poverty is a fundamental moral and political challenge for this generation<sup>1</sup>; deepening our understanding of it, and a strong evidence-base, is critical for establishing effective and well-targeted policies to alleviate chronic poverty.

Chronic poverty is multi-dimensional, and its causes are complex and overlapping. Hence, measures used to analyse poverty must appropriately reflect these factors. A cross-disciplinary approach – combining quantitative analysis of panel data (which tracks the same households or individuals over two or more survey years) and qualitative methods (such as life histories and focus groups) – enables us to go much further in analysing the causes and understanding the processes of chronic poverty, rather than quantitative or qualitative data on their own.<sup>2</sup>

The extended duration in absolute poverty is a distinguishing feature of chronic poverty. Studying the duration of poverty is particularly important because there is a compelling ethical argument for prioritising support for those who have experienced poverty for a much longer period of time and who are least likely to benefit from current anti-poverty policies. Moreover, studying the distribution of spells in poverty is important for strong analysis on the causes of chronic poverty and for identifying potential exits.<sup>3</sup>

### Using panel data methods to study chronic poverty

Panel data can be particularly useful in enhancing our understanding of poverty dynamics and the persistence of poverty overall. There is widespread recognition of the rigour and reliability of panel data methods. Panel studies provide opportunities for comparing data collected at different points in time, and thereby identifying trends, similarities, and differences, collected at different points in

#### **Box 1: Identification of the drivers, maintainers and interrupters of chronic poverty in Uganda using panel data**

Uganda made remarkable progress in reducing monetary poverty during the 1990s, according to its regular cross-sectional household surveys. The findings of a panel of 1103 households, surveyed in both 1992 and 1999 supports this, with poverty incidence falling from 48.6 percent of households in 1992 to 29.3 percent in 1999. Further analysis of this panel reveals that while the majority of households that were poor during 1992 had escaped poverty by 1999 (29.6 percent) a substantial minority remained trapped in poverty (18.9 percent) while others fell into poverty (10.3 percent) between 1992 and 1999. Further analysis of household-level variations in poverty dynamics using this panel enables investigation of the drivers, maintainers and interrupters of poverty.

Chronic poverty in Uganda is largely a rural phenomenon, with 91.9 percent of chronically poor households residing in rural areas. Of the 18.9 percent of households living in chronic poverty a third reside in the Northern region, with almost two in every five households living there in chronic poverty. In both years of the panel, chronically poor households are larger and have higher dependency ratios than the national average. They also have lower levels of human capital, with both the household head and spouse attending fewer years of school. In addition, they own fewer cattle and cultivate smaller amounts of land than the rural average. Chronically poor households are more likely to be engaged in own account agriculture and less likely to be involved in non-farm wage work, particularly when compared to the never poor group.

Analysis of movements into and out of poverty shows that households falling into poverty experience large increases in their household size and in the proportion of dependents, and had lower levels of human capital than the national average. These households are also less likely to have non-agricultural wage work initially and are more likely to have a household head that has ceased work, or moved from own account agriculture into agricultural wage employment; suggesting that it is more than life cycle households which drive descent into poverty. In contrast, escape from poverty is characterised by work in non-agricultural activities in rural areas, and this often depends on a sufficient level of human capital.

Panel data analysis then, highlights that a lack of education and key physical assets along with occupation and demographic factors as key drivers and maintainers of chronic poverty.

*Source: Lawson, McKay and Okidi (2003 and 2006)*



time. As such, it provides unique information on the persistence of poverty, on movements in and out of poverty, and on the influence of changes in the wider context on individuals. As the same information is collected from the same household or individual at different points in time, using structured survey questionnaires or semi-structured interviews, there is an increased likelihood of high quality data and of error reduction, particularly compared to some other types of surveys. In following householders and individuals over time, panel data studies provide important insight into the impact of socio-economic and political changes – such as democratisation, population growth, the introduction of new policies, and climate change – on individuals and communities, including the effects of various economic and anti-poverty policies.

With growing recognition of the value of panel data, donors and policy makers have suggested the collection of larger panels, which have the capacity to address a wide range of topics in a number of developing countries. There are ambitious new panel surveys that provide broadly national coverage in Indonesia, South Korea, and Vietnam; and national panel studies established or re-established in Tanzania, Uganda, and South Africa.<sup>4</sup> However, there is a dearth of panel studies overall, and the majority of developing countries do not have panel data, particularly that which is nationally representative and cross-generational.<sup>5</sup> There is also a dearth of panel studies in developing countries which span periods that are long enough to consider the intergenerational transmission of poverty.<sup>6</sup>

## Added value for policy makers

Panel data can help to identify the specific points in the life-course at which people are most likely to slide into chronic poverty, and the points at which this damage could be reversed, risks mitigated, or 'negative shocks' abated.

It is now widely accepted that static analyses have limited explanatory power and may conceal the processes that are central to the persistence of poverty and/or its elimination.<sup>7</sup> An understanding of the dynamics of poverty and of the different conditions affecting descents into, and exits from, chronic poverty that operate in diverse contexts can feed directly into formulation of policy to help people escape poverty, and to prevent their descent into poverty.<sup>8</sup> Panel data can help to 'unpack' static poverty data by providing richer and more dynamic information on the characteristics and trajectories

### Box 2: Panel studies of social transfer programmes

The growth and effectiveness of social transfer programmes in developing countries raise the issue of how to translate short-term gains into longer-term improvements in the productive capacity of households. Panel data has contributed to our knowledge of the long-term effects of Mexico's Oportunidades, which shows that participation in the programme translates into improvements in the long-term productive capacity of poor households. There are significant advantages in generating knowledge which can inform and guide the adaptation of existing social protection programmes, and the design of new programmes. The longest running social protection programme is Oportunidades, which was launched in 1997 in rural areas of Mexico. The programme design involved the collection of longitudinal experimental survey data between 1997–2000, and further evaluation survey datasets were collected in 2003 (when the programme was extended to urban areas) and in 2007. The experimental design of Oportunidades has provided rich information to estimate programme outcomes in the short run, and the longitudinal surveys provide the best dataset available for the assessment of longer-term effects of social transfer programmes in developing countries. A large measure of what we know about the long-term effects of social transfers comes from panel studies of Mexico's Oportunidades.

*Source: Barrientos and Nino-Zarazua (2010)*

of the individuals/households that lie behind these figures. Although most panel data analysis have focused on monetary dynamics, it can also be used to analyse other indicators of progress in well-being over time.

Panel data methods can thereby prove invaluable not only in enabling the effective design, timing, and targeting of anti-poverty interventions, but also in the monitoring and evaluation of policy. For example, panel data methods can enable the analysis of the long-term effects of social transfer programmes in southern countries, which target extreme poverty in terms of reducing, or supporting exit from, chronic poverty (Box 2).

## Some potential challenges to consider

For all its advantages, there are nevertheless difficulties involved in collecting panel data that must be carefully considered. As time passes, panels cease to be representative of the populations they originally represented, in the strictest statistical



### Box 3: The Philippines Bukidnon panel survey: cost effective panel studies are feasible

IFPRI's (International Food Policy Research Institute) experience in the southern Philippines across a 20 year time-span shows that cost-effective panel surveys are both possible and instructive. In 1984-85, a survey was carried out in 10 municipalities in Bukidnon, Mindanao to analyse the effects of the commercialisation of agriculture on nutrition, consumption, and income. The sampling was based on the household's distance from the mill, and included only households with at least one child under five years owing to its focus on childhood nutrition. The initial survey was conducted with 448 households in four rounds between 1984 and 1985, and a the research team returned to the same households in 1992 for a study on adolescents, which entailed a one round of household survey complemented by an ethnographic study.

In 2003, a further study re-surveyed individuals from the 1984/85 survey to understand how access to rural financial services affected patterns of physical and human capital accumulation, economic mobility and well-being. In the 20 years that had elapsed since the first survey, many children had left home to study, set up their own households, or search for better paid work in cities. Therefore, in addition to the original households, up to two of the children who had formed separate households in the same survey *barangay* (village) were traced. This tracking procedure resulted in a sample size of 572 households: 311 of these being original households from the 1984/85 survey and 261 being new household (splits). One of the reasons for the high re-contact rate was that many of the 2003 interviewers were the same people who conducted the interviews in 1984/85; their knowledge of the context also helps to ensure the quality of the data.

Since the 2003 survey did not include the children who have moved away from the *barangay*, this means that any conclusions based on the sample of children tracked within the *barangay* would be biased. Information on the addresses and contact details of household members who had migrated, collected during the 2003 resurvey was used in a follow-on survey that traced migrants in 2004, which was able to track 75 percent of migrants to urban, pre-urban and other rural areas.. The total cost of the Bukidnon surveys was approximately \$150,000 for field costs.

Source: Quisumbing and McNiven (2010)

sense. Even with extensive tracking of household splits (e.g. tracking members of a given household who have left the family unit), periodic top-ups of the sample are necessary to maintain cross-sectional representativeness.<sup>9</sup> Panel studies also amplify the effect of measurement error on welfare measurement, so that some of the transitions in and out of poverty (and economic mobility more generally) is a statistical artefact. The costs involved in panel data studies are also a potential disadvantage (although cost-effective panel studies are possible, see Box 3). Different priorities in changing political administrations may also hinder the implementation of long-term, cross-generational panel studies; significant and sustained long-term political commitment and funding is hence critical. Moreover, interviewee fatigue, the significant delay in analysis, matching households in large datasets, and systematic sample attrition are further potential disadvantages of this method.<sup>10</sup>

### The value of Q2 and an inter-disciplinary approach to studying poverty dynamics

CPRC research has shown that if we are to deepen our understanding of why poverty occurs and to

significantly improve the effectiveness of poverty reduction policies, there are three main fronts on which we must make progress. First, poverty research must focus on poverty dynamics – over the life-course, across generations, and between different social groups. Second, there is a need to move efforts to measure poverty dynamics beyond conventional income and consumption measures– to more multi-dimensional concepts of poverty and to develop axiomatically sound chronic poverty measures. Multi-dimensional measures are increasingly common in static poverty analyses but are still rare in work on poverty dynamics. Third, there is a growing consensus that a thorough understanding of poverty and poverty reduction requires cross-disciplinary research – which combines the strengths of different disciplines and methods. The CPRC has developed methods for combining qualitative methods (life history and focus groups), with panel surveys in Bangladesh in an integrated and sequenced manner (Box 4).<sup>11</sup> This combination of methods provided new insights into chronic poverty in Bangladesh, and are now being adapted and applied in Tanzania and other countries. One of the frontiers in poverty dynamics research lies at the intersection of cross-disciplinary approaches to study the multiple dimensions of poverty.<sup>12</sup>



#### **Box 4: Sequencing qualitative and quantitative methods to study poverty dynamics in rural Bangladesh**

The CPRC's work with the International Food Policy Research Institute (IFPRI) and Data Analysis and Technical Assistance, Ltd has pioneered new methods for integrating and sequencing qualitative (qual) and quantitative (quant) methods to study of poverty dynamics. The fieldwork for this study, which was conducted in 2006-2007, involved a three-phase qual-quant-qual study, which itself built on earlier IFPRI household surveys in 102 villages in 14 of Bangladesh's 64 districts.

Phase I involved qualitative focus-group discussions with four groups (of poor and better-off women, plus poor and better-off men) in a subsample of 29 villages in 8 districts. The focus groups aimed to elicit perceptions of the drivers of poverty dynamics and causes of persistent poverty, and were conducted in July and August 2006.

Phase II was a quantitative survey of the previously interviewed households plus new households that had split off from them but remained in the same district. The household survey took place from November 2006 to February 2007, the same agricultural season as the original surveys, and covered 2,152 households, of which 1,907 were households that took part in the original survey, and 365 were 'splits' from the original households.

Phase III was qualitative and collected life histories from 293 individuals in 161 selected households in eight of the districts in the original quantitative study. The eight districts were selected to represent a wide range of environments in rural Bangladesh, and in each district, we selected two villages from the quantitative survey. In each village 10 households were then selected on the basis of poverty transition matrices constructed using per capita expenditures from the earlier IFPRI surveys and the 2006/07 quantitative survey round and the Bangladesh Bureau of Statistics' (BBS) upper poverty lines. Thus the life-history interviews, which were conducted between March and October 2007, form a sub-sample of the larger quantitative sample.

Davis and Baulch (2011) compared poverty dynamics for the common sub-sample of households and individuals from Phases II and III of the project. They found that quant and qual assessments of poverty dynamics differ substantially, especially for movements in or out of poverty, and suggested various ways of reconciling these differences. Considering assets and proximity to the poverty line along with expenditures resolves about three-fifths of the mismatches between the qual and quant assessments of poverty dynamics. The life history interviews also provide much valuable information on the contributions of ill-health, dowry pressure, disability, domestic violence, social isolation or stigma to poverty dynamics

The authors conclude that integrating and sequencing qualitative and quantitative approaches using a 'medium N' sample can considerably enhance our understanding of the poverty dynamics and the causes of chronic poverty.

While the focus of this study was on understanding the drivers and maintainers of chronic poverty in rural Bangladesh, the study also maintained the intervention-comparison groups were from the previous IFPRI's surveys, which has allowed the long-term impact of three development interventions to be investigated in a follow-up project.<sup>13</sup>

*Source: Davis and Baulch (2009 and 2011)*

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The Chronic Poverty Research Centre (CPRC) is an international partnership of universities, research institutes and NGOs, with the central aim of creating knowledge that contributes to both the speed and quality of poverty reduction, and a focus on assisting those who are trapped in poverty, particularly in sub-Saharan Africa and South Asia.

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