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Is severe poverty a good proxy for chronic poverty? Evidence from a multi-country study

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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 transitorily poor, who move in and out of poverty, or only occasionally fall below the poverty line.

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Abstract

This paper seeks to assess the extent to which severe or extreme poverty, measured at one point in time, can serve as an adequate proxy for chronic poverty. It analyses 23 panel data sets from 12 countries. It concludes that severe poverty serves as a fairly reliable predictor of chronic poverty. Greater availability of panel data sets would make for a more reliable approach. Until then, severe poverty can be considered an adequate proxy for identifying significant numbers of the chronically poor.

Keywords: chronic poverty, severe poverty, panel data

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Contents

1 Introduction

Even if the world does succeed in realising the first Millennium Development Goal of halving the proportion of the population living in absolute poverty by 2015, this would still leave large numbers in absolute poverty. It is likely that many of these absolute poor will be in chronic poverty, in other words having been poor for a substantial period of time. Chronic poverty may reflect a number of factors: an insufficient level of assets to enable people to escape poverty (Carter and Barrett, 2006); high levels of vulnerability leading to choice of low return activities or liquidation of assets (Dercon, 2006); discrimination (e.g. the extensive literature in relation to scheduled castes and tribes in India or indigenous groups in Latin America); or just living in a country characterised by low income and low growth. Chronic poverty may be interpreted as a situation where significant numbers may be caught in a poverty trap (Carter and Barrett, 2006; Chronic Poverty Research Centre, 2008).

Chronic poverty contrasts with transitory poverty, whereby people may move in and out of poverty depending on circumstances (e.g. losing or gaining a job, price changes). As a consequence, responding to chronic poverty is likely to require specific policy measures different from those appropriate to transitory poverty (Chronic Poverty Research Centre, 2004; Chronic Poverty Research Centre, 2008; Barrett *et al*., 2006; Baulch and Hoddinot, 2000). Tackling chronic poverty is an urgent issue, given the need to break entrenched disadvantage. But a major challenge in doing so is lack of knowledge about the extent and characteristics of the phenomenon, and its importance relative to transitory poverty. Major progress has been made in assessing global poverty on a comparative basis across countries based on an absolute poverty line, with studies conducted by Ravallion and co-authors at the World Bank being particularly influential (Ravallion *et al*., 1991; Chen and Ravallion, 2001, 2004, 2007, 2008). These studies allow an assessment of trends over time, but they do not enable assessment of poverty dynamics; reductions or increases in poverty at the country level may still be associated with significant movement into and out of poverty (Lawson *et al*., 2006).

Assessing chronic poverty requires the availability of panel data, whereby the poverty status of each specific household can be assessed at different points in time. But the main obstacle in assessing chronic poverty is the limited availability of panel data, and especially in the poorest countries. Panel data are available for around 20 developing countries or areas of developing countries, and many of these are not easily accessible. In addition, panel data sets are often not readily comparable across countries given differences in methodology. Further panel data sets will anyway tend to underestimate chronic poverty, in that measurement error will inevitably exaggerate the extent of transitory poverty. Faced with this practical difficulty, this paper seeks to assess the extent to which it might be possible to identify the chronically poor, defined in monetary (consumption/income) terms, based on information at a single point in time: can severe or extreme poverty, measured at one point in

time, serve as an adequate proxy for chronic poverty? It seems intuitive that households that fall far below a poverty line at one point in time are likely to find themselves below that poverty line for an extended period. How likely are the severe poor to be chronically poor? This is an empirical question, which can be assessed based on available panel data sets.

We investigate this question in this paper based on our own detailed case by case analysis of 23 panel data sets available to us, from 12 countries. There are two fundamental questions. Does severe poverty give a reasonable estimate of numbers of chronically poor? And even if it does not, is the fact that a household is severely poor at a point a good indicator of it being likely to be chronically poor in the future (or conceivably the past). Then in each case what factors account for greater or lesser overlap?

If this does serve as a reliable identifier of the chronically poor, this can be applied to a much larger sample of countries, requiring as it does just one-off household surveys. The estimates will still not generally be comparable across countries, but the country level information is still very valuable for anti-poverty policy in the country.

In examining this question we use national level poverty lines, almost always established based on nutritional norms, to define chronic poverty, avoiding the need to worry about exchange rate conversions. In almost all cases we define as severe poor a household that would need to devote its entire budget to food to obtain a basic nutritional basket (a food poverty line). To begin with we consider chronic poverty in two wave panels, but then extend this to consider three wave panels as well, considering in the latter case components as well as spells based definitions of chronic poverty. We find here that severe poverty often substantially underestimates the number of the chronically poor but it often serves as a much better identifier that someone is chronically poor. We also highlight some of the factors that account for greater or lesser success in measuring or identifying chronic poverty.

This paper is structured as follows. The following section briefly reviews factors that might influence the expected degree of overlap, while section 3 discusses conceptual and data issues, and begins to look at available poverty data. Based on two wave panel data sets initially, section 4 looks at how well severe poverty identifies the chronically poor in terms of numbers, while section 5 asks the more limited question of how many of the severe poor households are in fact chronically poor and how many of the chronically poor were initially severely poor. The question of section 5 is revisited in relation to three wave panels in section 6, following which section 7 sets out conclusions.

2 How much overlap would we expect?

The principle about using severe poverty in the first year of a panel data set as a proxy measure of chronic poverty over the length of a panel is that those that are severely poor at the outset are sufficiently far below the poverty line that they may not be likely to escape from poverty in the time period covered by the panel. Of course this is less likely to be the case in a context of rapid growth (where quite a few households are likely to escape from poverty even if some may fall back) and when the length of time covered by the panel is longer. Also where consumption (or income) is more volatile, severe poverty may serve less well as an indicator of chronic poverty, though it is important to remember that some element of volatility is also a consequence of measurement error so the panel might underestimate chronic poverty. But where growth is low (or negative), consumption volatility is limited or the time period covered by the panel is shorter, severe poverty may serve as a more reliable measure of chronic poverty.

In considering the extent to which severe poverty predicts chronic poverty there will be a trade-off between a type one (I) and a type two (II) error. Successful predictions are when a severely poor household is in fact chronically poor, or when a non-severely poor household is not chronically poor. A type I error will occur when a severely poor household is in fact not chronically poor ,whereas a type II error occurs when a household is not severely poor but is nonetheless chronically poor.

Possible explanations for a higher type I error include those mentioned above: rapid growth, high volatility and long periods of time covered by the panel; but another circumstance in which high type I error may occur is when the severe poverty line is close to the national poverty line. In this situation, other things being equal, a smaller increase in consumption/income is required to take a severely poor household out of poverty by the end of the panel. A larger type II error is more likely in a context of slow growth and volatility and for a panel covering a short time period; but is also more likely when the severe poverty line falls significantly below the national poverty line.

In these circumstances it may be less likely that the household to be severely poor in the first period, but it still may be difficult for many households to raise their consumption level above the national poverty line by end of the period.

It is important also to distinguish the two separate questions: estimating numbers of chronically poor and identifying households that are chronically poor (not necessarily comprehensively). If the focus is on trying to estimate numbers then it is desirable that the severe poverty line is quite close to the national poverty line because that will reduce the extent of type II error (missing households which are in fact chronically poor because they are not classified as being severely poor). But if the concern is being able to identify

households that can confidently be classified as chronically poor then type II error is less a concern; rather one wants to minimise type I error. This is more likely when the severe poverty line is lower compared to the national poverty line.

It is also possible to consider the extent to which severe poverty at the end of a panel is indicative of chronic poverty over the period of a panel. The same principles as above will apply, and end of period severe poverty may be a good estimator or identifier of chronic poverty in an environment where there has been economic growth over the period.

3 Description of data

3.1 Panel data

This paper is based on all panel data sets that were available to us and where there was a sufficiently large sample (200 households or more). We currently have data on 12 countries (China - Sichuan, Côte d'Ivoire, Ethiopia - rural, Egypt, Indonesia, Nicaragua, Peru, South Africa - KwaZulu Natal, Tanzania - Kagera, Timor Leste, Uganda, Vietnam), mostly national level data except where otherwise specified (Table 1). In Vietnam there were two separate episodes of collecting panel data and both are reported here. The panel data sets cover between 2 and 13 years. Some panels cover only two waves, but at least seven have three waves or more. They differ in terms of their experience of attrition and in terms of the tracking procedures adopted to follow those that moved. A number of other panel data sets have been collected, including some with a longer time horizon (e.g. ICRISAT in India), but we were not able to access them for purposes of this paper. The size of the panel data sets vary from more than 3000 in China (Sichuan), Indonesia and Vietnam, to between 1000 and 3000 (Ethiopia, Nicaragua, Peru, Uganda) to less than 1000 households (Côte d'Ivoire, Egypt, South Africa (KwaZulu Natal), Timor Leste and Tanzania (Kagera)).

3.2 Poverty lines: normal and severe poverty lines

This paper is concerned with comparisons between severe and chronic poverty, defined in consumption or income space, within a country, rather than between countries. There is now a recognised consensus across many countries on an approach to estimate national poverty lines, based on identifying and valuing a minimum food consumption basket satisfying nutritional norms, and adding an allowance for non-food consumption (Ravallion and Bidani, 1994). How this is implemented in practice varies from country to country, but this provides a basis for a national poverty line (which includes the non-food norm) and a national severe poverty line (the cost of the minimum food basket only).

Focussing on national poverty lines avoids the challenge of needing to convert into common currency values which would be implied by using for instance a-dollar-a-day type poverty line. Where national poverty lines were available only in one wave (Tanzania, Uganda) we deflated consumption values using appropriate deflators in order to have comparable values across all waves.

3.3 Poverty measures and growth

Looking at the number of poor in first and subsequent waves of the panel data, we can see different dynamics (Table 1). In both panels in South Africa, in Timor Leste, in Egypt, in the first waves in China and Ethiopia and in the second and third waves in Côte d'Ivoire both

poverty and severe poverty rose. These increases were particularly large in the third panel in Côte d'Ivoire and the longer panel in South Africa although within all other panels, both poverty and severe poverty fell. Here reductions were largest in the longer panel in China, Indonesia, Uganda and Vietnam.

The experience of overall poverty reduction can be explained to a significant extent by a country's growth context, as presented in Table 2, which shows the mean and median consumption growth rate for households in the panel[1], as well as the standard deviation of consumption growth rates as a measure of volatility. The reported median growth rates among panel households are high in Peru, Uganda and Vietnam within each of these periods, in China (Sichuan) in the 1993-95 and 1991-95 periods and in Indonesia between 1993 and 1997. These are all cases where poverty, and severe poverty, fell sharply over the period. In the cases where poverty rose, Côte d'Ivoire, Egypt, Timor Leste and South Africa, median growth rates are negative; the same was the case for Ethiopia over 1994-95. For the remaining countries and periods growth rates tend to be very low, and poverty reduction was modest; this was the case for instance in Nicaragua and Tanzania (Kagera).

[1]In most cases the growth rate in the mean or median household income (as opposed to the mean or median of the growth rate) are not significantly different. Further, in general growth rates in the panel are similar to the whole sample. The exception is Peru where growth rates are much higher in the panel than for the full sample, and where the mean/median growth rates are somewhat higher than the growth rate of the mean/median.

Table 1: Size of panel, number of poor, sever poor and chronically poor

Country	Panel	Size of panel	Poor		Severe poor		Chronic poor	Overlap severe
			first wave	last wave	first wave	last wave	(spells)	and chronic
China (Sichuan)	Panel 1991-1993	3311	823	865	515	564	472	328
	Panel 1991-1995	3311	823	577	515	347	306	224
Côte d'Ivoire	Panel 1985-1986	714	257	255	102	61	174	79
	Panel 1986-1987	693	200	241	46	57	139	37
	Panel 1987-1988	701	208	280	69	102	178	65
Egypt	Panel 1997-1999	348	105	126	8	23	77	6
Ethiopia	Panel 1994-1995	1377	574	710	479	574	369	321
	Panel 1994-1997	1404	582	577	486	464	321	291
Indonesia	Panel 1993-1997	6446	1482	935	924	536	551	403
	Panel 1993-2000	6475	1485	968	925	506	501	363
Nicaragua	Panel 1998-2001	2715	1197	1088	418	363	840	362
	Panel 1998-2005	2715	1197	1135	418	371	827	348
Peru	Panel 2002-2004	2096	1103	973	435	289	756	357
	Panel 2002-2006	2096	1103	824	435	246	651	339
South Africa	Panel 1993-1998	859	392	482	190	313	307	160
	Panel 1993-2004	811	368	564	181	456	329	163
Tanzania (Kagera)	Panel 1991-2004	780	223	214	108	101	90	47
Timor Leste	Panel 2001-2007	518	143	208	44	56	81	29
Uganda	Panel 1992-1999	1077	527	326	309	147	210	136
Vietnam	Panel 1992-1998	3499	1919	1096	789	447	537	206
	Panel 2002-2004	4092	1083	652	372	215	520	254
	Panel 2004-2006	4275	709	631	271	256	430	219
	Panel 2002-2004-2006	1952	551	306	183	122	236	122

Table 2: Consumption growth rates, volatility and growth in mean or median consumption

Countries	Panel	Consumption growth rates		Volatility
		Mean	Median	(s.d. of growth rates)
China (Sichuan)	Rate 1991-1993	0.018	0.000	0.176
	Rate 1991-1995	0.034	0.029	0.096
Côte d'Ivoire	Rate 1985-1986	0.206	-0.046	0.972
	Rate 1986-1987	0.068	-0.018	0.559
	Rate 1987-1988	-0.023	-0.111	0.499
Egypt	Rate 1997-1999	-0.034	-0.060	0.232
Ethiopia	Rate 1994-1995	0.423	-0.075	1.740
	Rate 1994-1997	0.066	0.010	0.363
Indonesia	Rate 1993-1997	0.073	0.051	0.215
	Rate 1993-2000	0.031	0.024	0.108
Nicaragua	Rate 1998-2001	0.038	0.017	0.188
	Panel 1998-2005	0.013	0.010	0.086
Peru	Rate 2002-2004	0.085	0.047	0.288
	Rate 2002-2006	0.054	0.050	0.141
South Africa	Rate 1993-1998	-0.029	-0.033	0.134
	Rate 1993-2004	-0.047	-0.047	0.076
Tanzania (Kagera)	Rate 1991-2004	0.009	0.007	0.058
Timor Leste	Rate 2001-2007	-0.036	-0.035	0.111
Uganda	Rate 1992-1999	0.052	0.046	0.104
Vietnam	Rate 1992-1998	0.075	0.053	0.172
	Rate 2002-2004	0.100	0.075	0.226
	Rate 2004-2006	0.042	0.023	0.216
	Rate 2002-2006	0.072	0.064	0.120

4 Overlaps in terms of numbers

Chronic poverty is then defined using the panel data with reference to the national poverty line. For two waves we choose spells rather than components definition of chronic poverty (Yaqub, 2000; McKay and Lawson, 2003), which identifies as chronically poor those that are poor in all (or most) waves of a panel. Table 1 reports data on chronic poverty for the available panel data sets. We use this to consider the extent to which chronic and severe poverty overlap.

In Ethiopia and Kagera the number of chronically poor is similar to the number of severe poor, though the overlap is significantly higher in the former than in the latter. In other cases the number of chronically poor is either somewhat larger (e.g. Côte d'Ivoire, Peru, South Africa and Timor Leste) or somewhat smaller (China, Indonesia) than the number of severe poor. This clearly will have direct implications for the extent of overlap of the numbers of chronic and severe poor.

A large majority of the chronically poor in China, Ethiopia and Indonesia are also severely poor in the initial period. The fact of being initially severely poor also identifies a majority of the chronically poor in some other cases including the first wave in South Africa, Uganda, and the later waves in Vietnam. But in other cases focusing on the initially severely poor substantially underestimates chronic poverty, strikingly so in Egypt and also in the earlier panels in Vietnam. So it seems that in most cases the criterion of being initially severely poor is not a reliable way of identifying all of the chronically poor.

Table 3: Ration of food poverty line on general poverty line

Countries	Waves	Poverty lines ratio
China (Sichuan)	1991, 1993 and 1995	0.895
Côte d'Ivoire	1985, 1986, 1987 and 1988	0.583
Egypt	1997 and 1999	0.468
Ethiopia	1994	0.828
	1997	0.826
Indonesia	1993, 1997 and 2000	0.800
Nicaragua	1998	0.527
	2001	0.522
	2005	0.549
Peru	2002	0.565
	2004	0.557
	2006	0.552
South Africa	1993, 1998 and 2004	0.655
Tanzania (Kagera)	1991 and 2004	0.730
Timor Leste	2001 and 2007	0.592
Uganda	1992 and 1999	0.715
Vietnam	1992	0.646
	1998	0.719
	2002	0.700
	2004 and 2006	0.829

As noted above, the extent to which severe poverty serves as a proxy for chronic poverty will reflect in part the gap between the severe poverty line and the overall poverty line with respect to which chronic poverty is defined (Table 3). In China, Indonesia and Ethiopia, the cases where severe poverty was a reasonable proxy for chronic poverty, the severe poverty line is greater than 80 percent of the level of the national poverty line. In cases where severe poverty substantially underestimated chronic poverty, the severe poverty line was less than 60 percent of the national poverty line, this being most strikingly the case in Egypt as well as Côte d'Ivoire, Nicaragua and Peru. The remaining cases are intermediate between these two.

5 Is severe poverty a good identifier of chronic poverty?

As already noted, it is quite clear that where a country's severe poverty line is low then severe poverty will substantially underestimate the numbers in chronic poverty. But we can still ask the question as to whether identification of severe poverty in an initial (or final) period nonetheless successfully identifies many such households as being likely to be chronically poor. Is this at least a reliable way of identifying a significant number of chronically poor households, and providing at least a lower bound on their numbers? The first column of numbers in Table 4 report on the number of those identified as severely poor at the beginning of a two wave panel that are identified as chronically poor.

The magnitudes of the overlaps vary quite a lot when looking at all our data. Overlaps range from 26 percent of the severe poor being chronically poor in Vietnam between 1992 and 1998 to 94.2 percent in Côte d'Ivoire between 1987 and 1988. Table 4 and Figure 1 show that eight panel data sets in five countries have overlaps between initial severe poverty and chronic poverty above 80 percent. For Nicaragua (1998-01 and 1998-05), Peru (2002-04), Vietnam (2004-06), Côte d'Ivoire (1986-87 and 1987-88) and South Africa (1993-98 and 1993-05) more than 80 percent of the initial severe poor are chronically poor in the sense that they are poor in both waves. Again slow rates of growth in per capita consumption, low volatility in consumption, a wide gap between the severe poverty line and the national poverty line, and a relatively short time period covered by the panel make it more likely that initial severe poverty is an adequate proxy for chronic poverty.

Slow or negative growth in per capita consumption is important in Côte d'Ivoire, Nicaragua and South Africa for instance, while in Nicaragua low volatility in consumption in has been another factor keeping households below the poverty line there. In Côte d'Ivoire volatility may be quite high, but most households are moving downwards. The fact that the severe poverty line is a long way below the poverty line in many of these cases is another factor explaining why identification of severe poverty is a reliable identifier of chronic poverty.

In Peru and Vietnam, consumption growth rates are larger, but in both cases the volatility is relatively low, and the length of the panel is short, factors which make it more difficult for severely poor households to raise their consumption above the poverty line. In another 9 panel data sets in six countries (Ethiopia, Côte d'Ivoire, 1985-86; Egypt, Vietnam, 2002-04 and 2002-06; Peru, 2002-06; China, 1993-95 and Timor Leste, 2001- 2007) the overlap is still above or close to 60 percent. Compared to the previous cases, the lower overlap in Peru and Vietnam over these periods reflects faster growth in these panel periods. In Ethiopia, the lower (though still significant) overlap probably reflects the high volatility and the fact that the severe poverty line is close to the national poverty line. Again negative or low growth is part of the story for the relatively high overlap in some cases (Ethiopia in 1994-95, China, Côte d'Ivoire and Egypt and Timor Leste), this combined with high volatility in Côte d'Ivoire and

Ethiopia. The fact that the overlap is higher in say Egypt than China resides in the fact the ratio of poverty lines in China is higher than in Egypt; therefore more severely poor Chinese households have raised their consumption expenditures above both poverty lines compared to Egyptian households where the food poverty line is only 46.8 percent of the general poverty line. In Ethiopia between 1994 and 1997, consumption growth rates are positive and volatility lower, which may explain the decrease in the overlaps between initial severe poor and chronically poor.

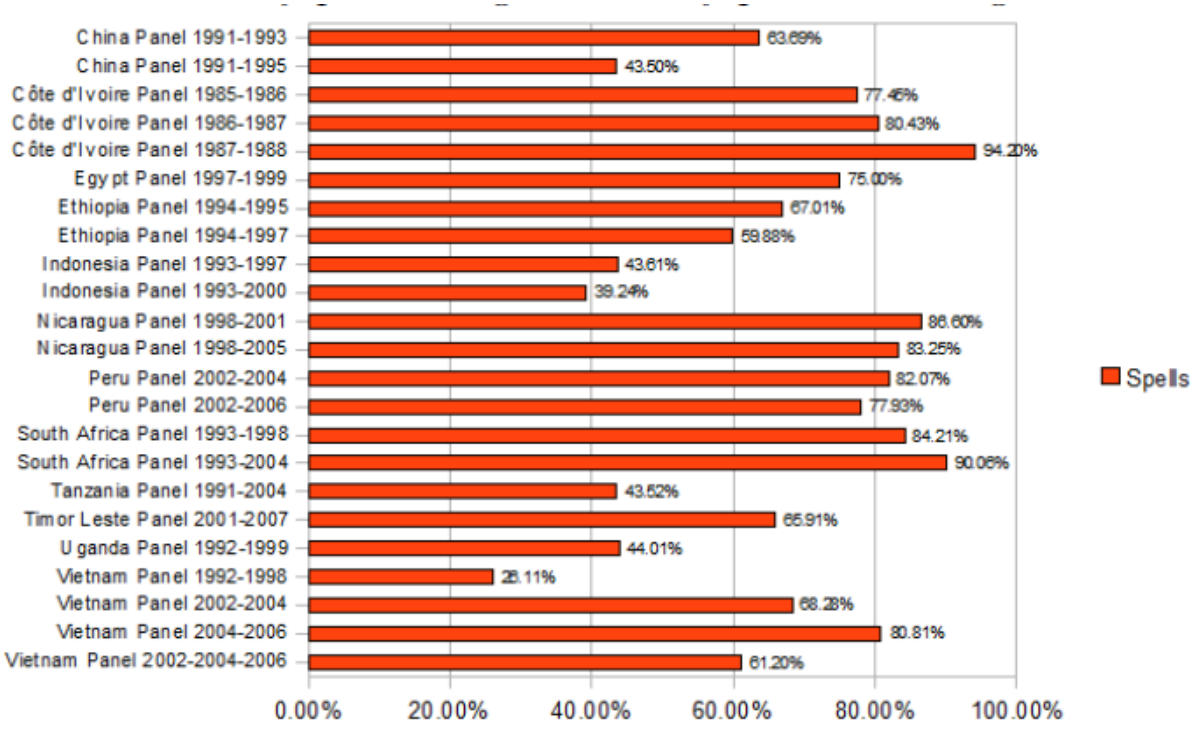
Peruvian households have high growth rates of their consumption per capita, but the relatively low ratio of the poverty lines means that still 77.93 percent of the severe poor in 2002 are poor in 2006. In Vietnam, for both panels 2002-04 and 2002-06, consumption growth rates are also high, respectively 7.5 percent and 6.4 percent, but volatilities are low. This could explain why still more than 50 percent of the severe poor in 2002 have not managed to escape poverty in 2004 or 2006, even if more severely poor households have escaped poverty in 2006.

For the remaining six panels in five countries the overlap is below 50 percent. In Vietnam (1992- 98), Uganda and Indonesia (1993-97), half of the households increased their consumption by above 5 percent, but in the other cases (China, 1991-95; Indonesia, 1993 2000 and Tanzania) the growth rates were much lower. An important factor in some cases was the proximity of the food poverty line to the overall poverty line, so it is easier for more initially severely poor households to escape poverty completely. In Vietnam, volatility is higher which explains why more than 70 percent of the severely poor households have managed to escape poverty in 1998. In Tanzania, the consumption growth rate is small as well as volatility but as the poverty line ratio is 0.73 and the panel long, it seems that steady, gradual consumption growth has allowed severely poor Tanzanian households to raise their consumption over a general poverty line in 2004.

Table 4: Overlaps severe poverty and chronic poverty

Country	Panel	Initial severely poor being chronically poor	Chronic poor being initial severely poor	Final severely poor being chronically poor (spells)	Chronically poor being chronically severely poor
China (Sichuan)	Panel 1991-1993	63.69%	69.49%	59.57%	52.75%
	Panel 1991-1995	43.50%	73.2%	59.08%	52.29%
Côte d'Ivoire	Panel 1985-1986	77.45%	45.40%	81.97%	18.39%
	Panel 1986-1987	80.43%	26.62%	74.20%	10.79%
	Panel 1987-1988	94.20%	36.52%	87.25%	28.09%
Egypt	Panel 1997-1999	75.00%	7.79%	82.61%	1.30%
Ethiopia	Panel 1994-1995	67.01%	86.99%	57.49%	54.08%
	Panel 1994-1997	59.88%	90.65%	61.42%	80.69%
Indonesia	Panel 1993-1997	43.61%	73.14%	66.23%	49.00%
	Panel 1993-2000	39.24%	72.46%	59.09%	45.51%
Nicaragua	Panel 1998-2001	86.60%	43.10%	90.91%	24.29%
	Panel 1998-2005	83.25%	42.08%	88.41%	21.40%
Peru	Panel 2002-2004	82.07%	47.22%	88.24%	23.94%
	Panel 2002-2006	77.93%	52.07%	91.06%	24.42%
South Africa	Panel 1993-1998	84.21%	52.12%	72.20%	40.39%
	Panel 1993-2004	90.06%	49.54%	61.18%	43.16%
Tanzania (Kagera)	Panel 1991-2004	43.52%	52.22%	43.56%	27.78%
Timor Leste	Panel 2001-2007	65.91%	35.80%	41.07%	75.00%
Uganda	Panel 1992-1999	44.01%	64.76%	65.31%	30.48%
Vietnam	Panel 1992-1998	26.11%	38.36%	43.40%	14.90%
	Panel 2002-2004	68.28%	48.85%	87.91%	24.62%
	Panel 2004-2006	80.81%	50.93%	81.64%	31.63%
	Panel 2002-2004-2006	61.20%	47.46%	86.07%	44.49%

Figure 1: Initial severely poor being chronically poor according to both definitions



5.1 Limits of severe poverty as a good identifier

We now consider the question the other way round: how many of the chronically poor were severely poor at the beginning of the panel period (column 5 in Table 4 and Figure 2). Looking at it this way allows us to judge the extent of the underestimation arising when using severe poverty as a proxy for chronic poverty. The discussion in section 4 suggests that it will be significant in some cases.

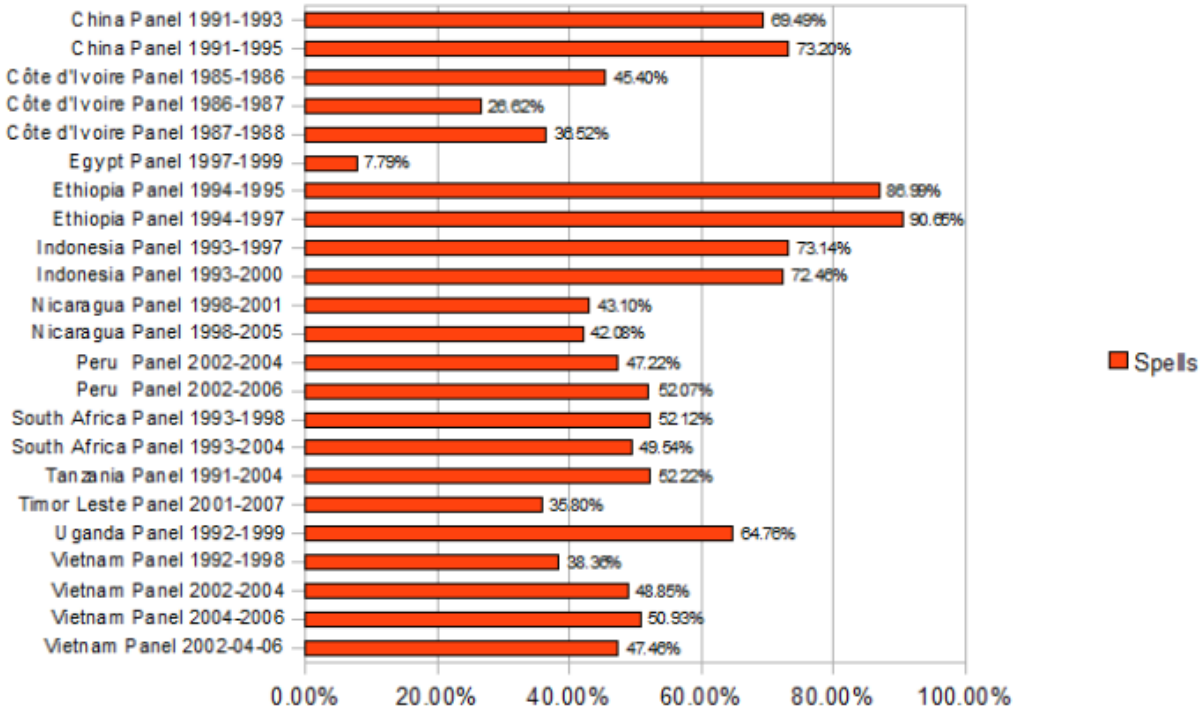
The overlaps range from 90.65 percent in Ethiopia (1994-97) to 7.79 percent in Egypt. A wide range of values in between are identified. The overlap is only ever above 80 percent in Ethiopia, and only above 70 percent in Indonesia and one wave in China. All are cases where the gap between the food poverty line and the national poverty line are relatively small. This means that in other cases using the criterion of severe poverty to identify the chronically poor will miss a large number of cases.

The underestimation is particularly serious in Egypt, Côte d'Ivoire (all three panels), South Africa between 1993 and 2004, Vietnam (all four panels), Peru and Nicaragua, where in each case less or very close to half of the chronically poor were severely poor in the initial period. Many of these are cases were the severe poverty line is low compared to the normal poverty line. The overlap is a bit better for the other cases: (Ethiopia, China, Indonesia,

Tanzania, Timor Leste and Uganda) where more than half of the chronically poor are extreme poor in a first wave. Therefore using severe poverty in a first wave would identify at least half of the chronically poor.

In short, while the fact that a household is severely poor is in most cases reasonably successful at identifying them as being chronically poor, in many cases this substantially underestimates the extent of chronic poverty.

Figure 2: Chronically poor according to both definitions being initial severely poor



5.2 Findings

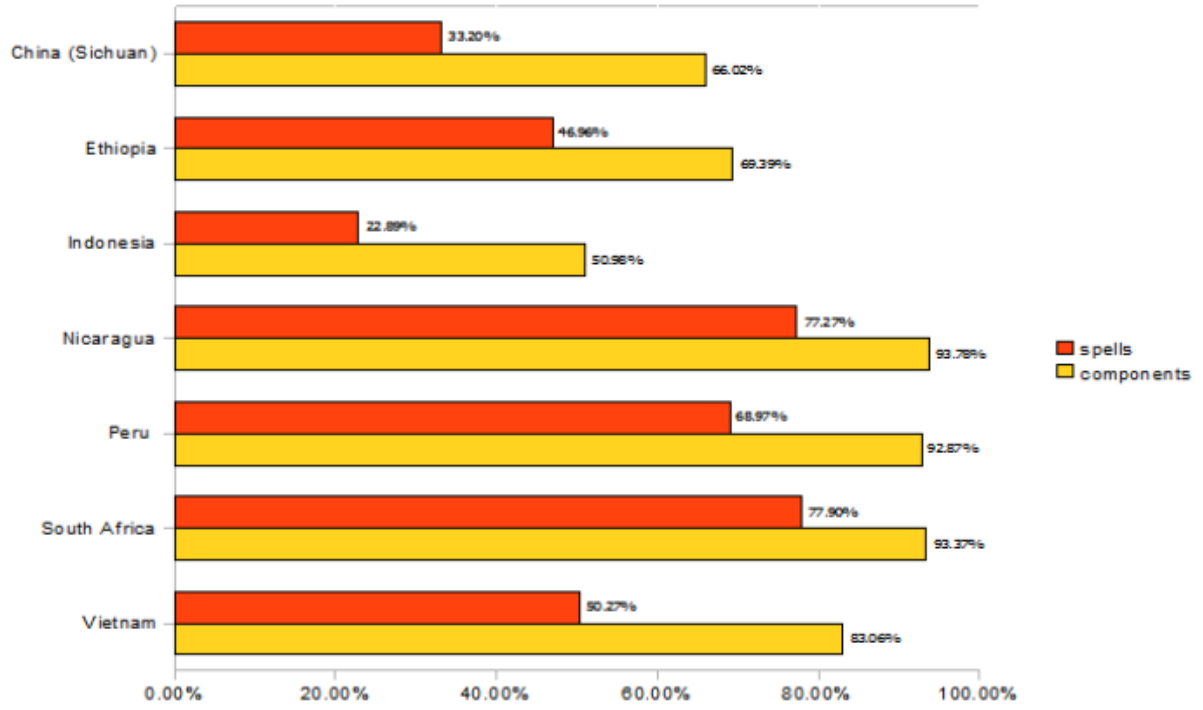
Severe poverty is a better estimate for chronic poverty when households have not increased their consumption, when they show limited mobility in terms of consumption, when panels are short, and when the ratio of food poverty line to the national poverty line is large. In other cases it identifies chronic poverty less precisely.

The fifth column of Table 4 considers whether identifying a household as severely poor in the second wave of a panel is a good predictor of it being chronically poor in the panel that preceded that date. In many cases this identifies a higher degree of overlap, as in the cases of China (1991-95), Ethiopia (1994-97), Indonesia, Nicaragua, Peru, Tanzania, Uganda and Vietnam. What these cases have in common is an experience of positive (or at worst zero) growth over the period. In these circumstances it is logical that final severe poverty gives a more accurate identification of chronic poverty in the preceding period. Where growth was

negative this is often not the case (the second and third waves in Côte d'Ivoire, South Africa. In these panels more people have fallen into poverty, or severe poverty, during the period.

The final column of Table 4 shows the number of chronically poor that are in fact chronically severely poor. Only in four cases, from China and Ethiopia, are more than 50 percent of the chronically poor severely chronically poor. Again this reflects the two cases where the ratio of the food poverty line to the general poverty line is highest. In all other cases a minority of the chronically poor are persistently severely poor; this reflects significant magnitudes of growth or decline in consumption in many cases, high levels of volatility, or simply the fact that poverty levels were not that severe.

Figure 3: Initial severely poor being chronically poor across three waves according to both definitions



6 Chronic poverty over three waves

We now consider comparisons between initial severe poverty and being poor over three waves, when panel data with at least three waves are available, here in seven countries. Given three waves, it is feasible to analyse chronic poverty using both spells and components definitions. The latter identifies a chronic component to poverty for each household equal to the extent to which its mean consumption falls below the poverty line, and defines the rest of its poverty, reflecting consumption volatility, as transitory poverty. Chronically poor households in a components sense can be identified as those with mean consumption below the poverty line.

The overlaps between initial severe poverty and chronic poverty are presented in Table 5. Using the spells concept, the number of households that are poor in three waves is of course less than the numbers poor over two waves. Thus significant numbers of households managed to escape poverty in the intermediate wave, compared to when only the first and final waves are considered. The overlaps between initial severe poverty and chronic poverty are now less than 50 percent in China, Ethiopia and Indonesia; though remain above 50 percent for all other cases.

The spells definition is of course a much more rigid definition of chronic poverty when three waves are considered if the criterion to be chronically poor is to be poor in all three waves. But in South Africa, Peru and Nicaragua still between 68 percent and 77 percent of severe poor households in the first wave did not succeed in escaping poverty in any of the two following waves. In Ethiopia and Vietnam nearly half of the initially severe poor have managed to escape poverty in at least one of the two following waves. But for Indonesia, 77.1 percent of the severe poor in 1993 managed not to be poor in 1997 or/and 2000. Some of the severe poor in the first wave have escaped poverty in the second wave but then have fallen into poverty in the third wave, which results from the negative growth rate between 1997 and 2000 in Indonesia.

There is possibly a case for preferring the components definition of chronic poverty when considering a three wave panel. Using this definition, a majority, usually a large majority, of the initially severe poor are chronically poor in all seven cases. For Nicaragua, Peru and South Africa the overlap is over 90 percent and it is greater than 80 percent for Vietnam.
Again in these cases initial severe poverty is a good indicator that a household is likely to be chronically poor.

Table 5 also reports the overlaps between chronic poverty according to both definitions and initial severe poverty. The overlaps range from 90.0 percent in Ethiopia to 47.8 percent in Nicaragua when chronic poverty is defined with a spells definition and from 74.9 percent in Ethiopia to 36.6 percent in South Africa when chronic poverty is defined with a components

definition. If using severe poverty as a proxy for chronic poverty, we would capture between 50 and 90 percent of the chronically poor who are poor over three waves, while the underestimation is bigger if we defined chronic poverty as having their average consumption over three waves below a poverty line. Therefore, if using severe poverty as a proxy for chronic poverty defined with a components definition, we miss out between 25 and 63 percent of the chronically poor who were not severely poor in a first wave.

Therefore, even if severe poverty could be a good proxy to estimate chronic poverty, it seems that significant numbers of chronically poor would not be identified. An interesting point is that severe poverty better captures chronic poverty defined with a components definition but on the other hand, the underestimation would be larger than with chronic poverty defined with a spells definition.

Table 5: Overlaps severe poverty and chronic poverty during three waves

Country	Panel	Initial severely poor being chronically poor		Chronic poor being initial severely poor		Number of chronically poor	
		Spells	Components	Spells	Components	Spells	Components
China (Sichuan)	Panel 1991-1993-1995	33.2%	66.02%	76%	60.82%	225	559
Ethiopia	Panel 1994-1995-1997	46.96%	69.39%	89.96%	74.89%	249	442
Indonesia	Panel 1993-1997-2000	22.89%	50.98%	77.29%	66.76%	273	704
Nicaragua	Panel 1998-2001-2005	77.27%	93.78%	47.78%	37.51%	676	1045
Peru	Panel 2002-2004-2006	68.97%	92.87%	55.25%	45.09%	543	896
South Africa	Panel 1993-1998-2004	77.90%	93.37%	53.01%	36.58%	266	462
Vietnam	Panel 2002-2004-2006	50.27%	83.06%	53.18%	45.65%	173	333

7 Conclusion

There is clearly a substantial variation across countries in how the concepts of severe poverty that they use, relate to their national poverty lines; even if both are in principle established following a broadly similar methodology. In Egypt for example, the severe poverty line is very low relative to its poverty line, whereas in Ethiopia the two lines are very close. To some extent this reflects differences between a middle income and low income country, but there is also a substantial variation within countries of similar income levels. This means that severity of poverty cannot be relied on as a measure of the numbers of chronically poor, whether the latter are defined in spells or components terms.

But severe poverty acts much more successfully as an identifier of chronic poverty, and especially in a three wave panel when the latter is defined in components terms. The identification tends to be less successful for faster growth environments or where the panel spans a longer period of time. But in two thirds of cases, more than 60 percent of those who are severely poor at the beginning of a period still are persistently poor in the subsequent panel. Again the less successful cases are generally associated with fast growth environments, where reasonable numbers of the initially severe poor are able to raise their incomes above the poverty line by the end of the panel period.

Severe poverty therefore serves as a fairly reliable predictor of chronic poverty, and is almost certainly better than any alternative candidate. The more reliable approach will of course rely on much greater availability of panel data sets, but until this happens, severe poverty can be considered an adequate proxy for identifying significant numbers of the chronically poor. However, it is just as important to remember that this will still miss significant numbers of the chronically poor.

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