



Chronic Poverty
Research Centre

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Growth and the poorest: A panel data analysis for Uganda

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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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Summary

This paper looks at the relationship between growth and the poorest based on a panel data set – where the same household is surveyed at more than one point in time. A major advantage of this approach is the ability to observe household mobility over time, so capturing upward and downward movements in measures of wellbeing. This mobility is not captured by growth incidence curves, which compare households in a given percentile group with those in the same percentile group in a later period. Panel data also enable the identification of the chronic poor – those poor at more than one point in time, so enabling a focus on a different and perhaps more intuitive concept of the poorest, those whose poverty is persistent.

This paper examines the extent to which the poorest are able to participate in growth using a panel data set of more than 1000 households covering the 1990s, and looking at income and non-income measures of wellbeing. In brief the results suggest considerable mobility over time in terms of income measures of wellbeing, but somewhat less in terms of the non-income measures considered here. Thus the income GICs (which still show quite fast growth for the poorest decile over this period) do not give the full picture about the relationship between growth and the poorest; but the non-income GICs capture this somewhat better.

Many of the poorest households in 1992 in fact raised their income (strictly consumption) levels substantially over this period, sufficient in many cases to enable them to have escaped poverty completely by 1999; at the same time though quite a few non-poor households in 1992 fell into poverty by the end of the decade. The chronic poor – those poor in growth periods – experienced quite fast growth in their incomes over this period, at comparable rates to those that were never poor; and the same applies for the chronic poor defined relative to a lower, extreme poverty line.

In short, over a period of rapid growth in Uganda, the poorest participated substantially in this, many of them achieving significant improvements in income and non-income dimensions of wellbeing.

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1 Introduction

This paper is written as part of a project reviewing available evidence on the relationship between economic growth and the poorest. This has involved a review of the Operationalising Pro-Poor Growth case studies looking specifically on the poorest (Grant, 2005), and an analysis of trends over time in non-income indicators in two low income countries that experienced growth, Ghana and Uganda, again with a specific focus on the poorest (Anderson, 2005). In both cases the poorest were considered as those in the lowest decile group or groups, and analysis relied significantly on the growth incidence curve methodology.

This paper complements these other papers by following the same households over time, through the use of a panel data set. This allows the poorest to be identified in terms of persistence (those households below the poverty line at more than one point in time), a key concept of chronic poverty; it also allows an examination of mobility over time. Thus we can consider to what extent the poorest 10% of households in year overlap with the poorest 10% in a later year – or does mobility mean that there is a significant change in the composition of decile groups? This is a key part of understanding the relationship between growth and the poorest.

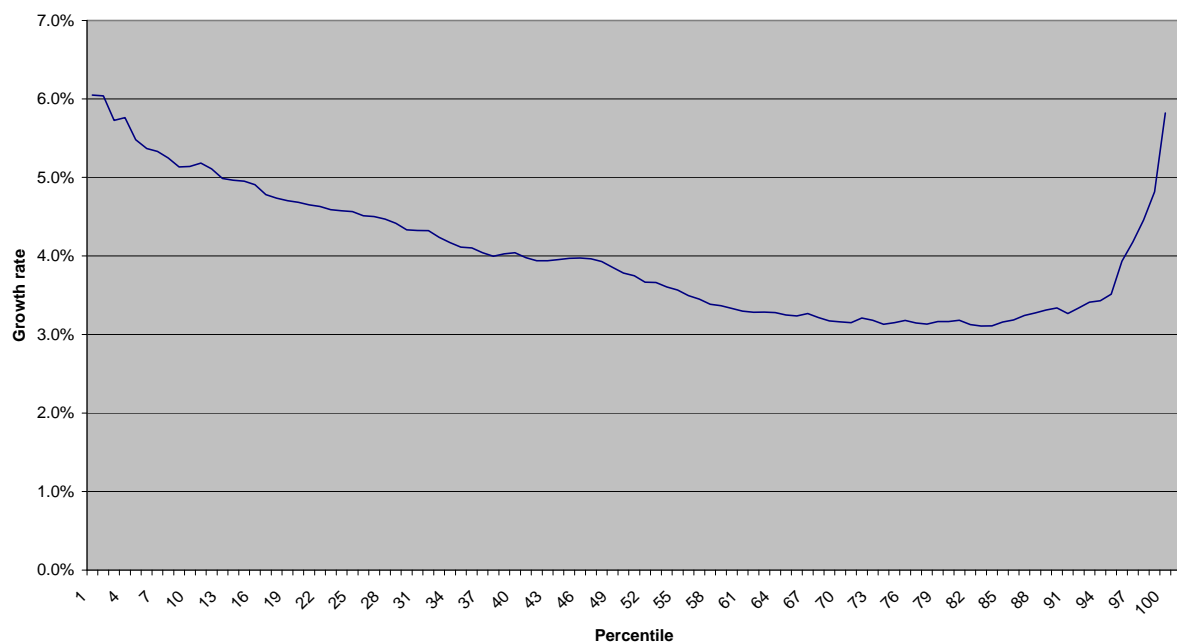
The panel data set for Uganda used in this paper comprises two observations on 1077 households covering the whole country, the first in 1992/93 and the second in 1999/2000 (referred to as 1992 and 1999 for brevity from now on). The data allows computation of a number of different indicators of wellbeing, including household consumption per adult (the same indicator used in the standard analysis of income poverty in Uganda by Appleton and others) and a variety of non-income indicators covering education, child vaccination, and access to key household amenities (electricity, drinking water and sanitation). The latter are the same indicators used in the accompanying paper by Anderson (2005), but the latter was based on the full samples, not just the panel element.



2 Poverty trends in Uganda 1992-1999

This period was one of significant growth and poverty reduction in Uganda. The survey data suggests that household consumption levels in 1999 were around 42% above their 1992 values (an average growth rate of around 5.2% per annum) and poverty fell substantially from 56% in 1992 to 34% in 1999 with inequality remaining largely unchanged. The distributional pattern of growth over this period is illustrated in Figure 1 below, showing significant growth for the very poorest as well and an overall distributionally neutral pattern of growth.¹

Figure 2.1: Consumption growth incidence curve, Uganda, full sample 1992-99



This shows fast growth for the poorest over this period, more so than the growth incidence curve for the longer period 1992-2003. However, this analysis does not capture mobility over the period, because the sample of households surveyed changed substantially over this period. To examine mobility calls for a panel dataset, which is available in this case for a subsample of 1077 households. Analysis of the panel component allows an identification of the extent to which those in the poorest decile of households in 1992 were still in the poorest decile in 1999, or had moved into a higher decile group. It similarly allows an identification of the extent to which households fall back into lower decile groups over this period.

¹ Note that this differs from the growth incidence curve in the OPPG case study which covers a longer period (1992-2003) and shows increasing inequality (see also Grant, 2005); this is because growth between 1999 and 2003 was unequalising.



The panel subsample also covers the entire country, and shows a similar pattern of distributional change to that shown by Figure 1 for the full samples (Annex Figure A.1 shows the growth incidence curve for the panel subsample). A poverty analysis of the panel subsample shows considerable mobility (Table 1). 49% of the panel households were poor in 1992, but by 1999 three fifths of these households had escaped poverty. At the same time around one fifth of those that were above the poverty line in 1992 had fallen below it by 1999 – in other words, while upward mobility dominated there was also significant downward mobility over this period. 19.5% of the panel households were chronically poor, in the sense of lying below the poverty line in both 1992 and 1999. A similar analysis relative to the extreme poverty line shows similar results (Annex Table A.1), although a lower proportion of the extreme poor in 1992 remain extremely poor in 1999.

Table 2.1: Changes in poverty status in the 1992-99 panel

1992 poverty status	1999 poverty status	Percentage of panel households
Poor in 1992		48.9
	Of which still poor in 1999	19.5
	Of which non-poor in 1999	29.4
Non-poor in 1992		51.1
	Of which poor in 1999	10.8
	Of which still non-poor in 1999	40.3
All households		100

Source: author's computation from the Uganda panel dataset.

The growth incidence curves for both income and non-income indicators, and other summary statistics of poverty based on the full sample, only tell part of the story about the participation of the poorest in growth because they do not trace the same households over time and do not capture the considerable churning which appears to be present in the data with households moving both up and down. The remainder of the paper focuses on the panel aspect of the data, looking first at monetary and then non-monetary dimensions of poverty. In so doing households are ranked according to their income percentile groups in 1992.

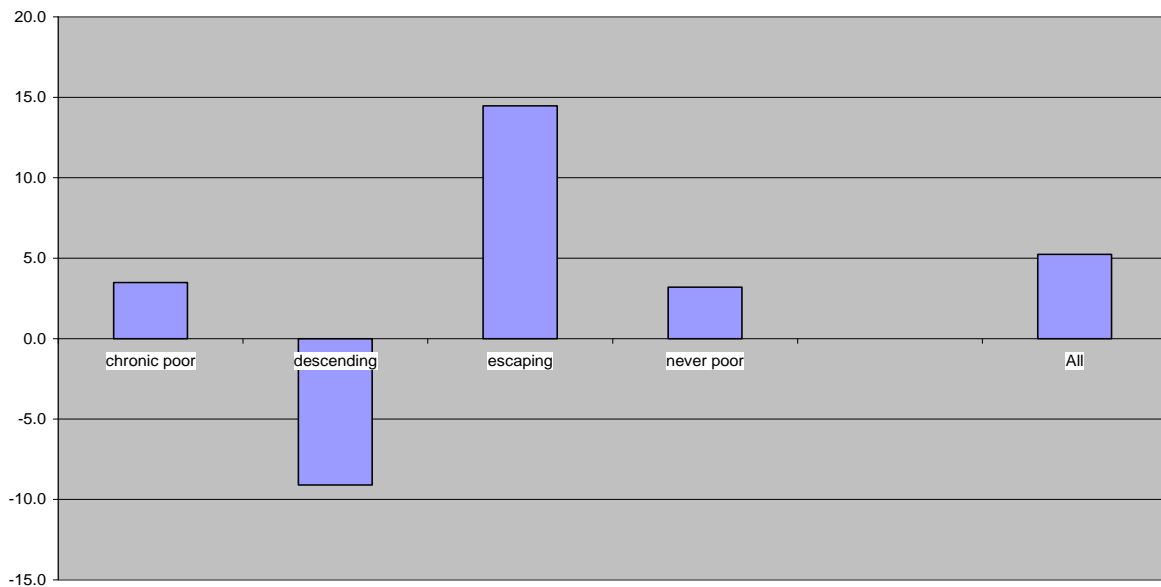
In looking at the panel data though it is important to bear in mind that some apparent mobility in income may simply be picking up measurement error, the extent of which can be quite important in looking at changes over time.



3 Growth and income poverty

The previous analysis in Table 1 classifies households into those that were poor in both periods (chronic poor); those that were poor in 1992 but not in 1999 (those escaping poverty); those that were not poor in 1992 but that were poor in 1999 (those falling into poverty); and those that lay above the poverty line in both periods (the non-poor). Examining how growth rates vary across these four groups (Figure 2, and Annex Table A.2), those escaping poverty show a very fast average increase in their consumption of nearly 15% per annum. Even for those households that remain trapped show fast average rates of growth in their consumption over the period (3.5% p.a. over seven years translates into an increase of 27% in their consumption level over this period). Clearly this growth rate was not sufficient to take many of these households above the poverty line, but the chronic poor still show rates of growth in consumption slightly higher than those households that were never poor. On the other hands those falling into poverty experienced a sharp reduction in their consumption levels over this period.

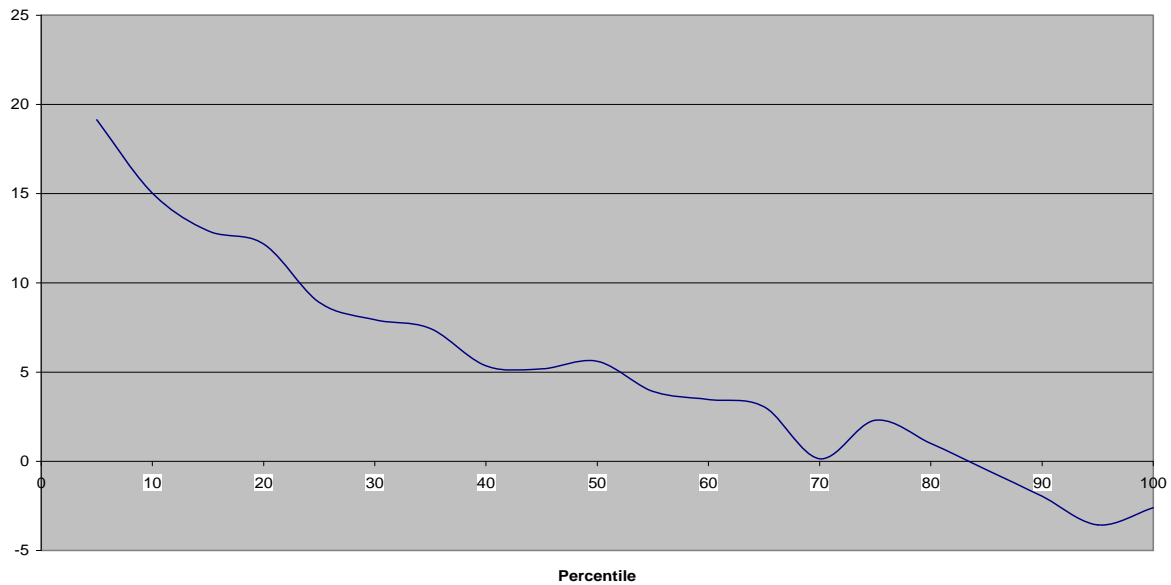
Figure 3.1: Mean annual growth rate of household consumption per adult, panel households, 1992 to 1999



However, it is important to remember that these are average growth rates for each of these groups and there is significant variation about the mean (as indicated by the standard deviation figures in Annex Table A.2). A similar analysis for the chronic extreme poor not presented here shows slightly slower growth rates for this group – but still quite large at 2.6% per annum over this. A geographic disaggregation of these results shows faster growth in urban areas compared to rural areas, and slower growth in the conflict affected northern region compared to the rest (Annex Table A.3).



Figure 3.2: Annual growth rate of consumption for panel households, by percentile, 1992 to 1999



Developing this analysis, ranking households according to their income percentile groups in 1992, the panel data shows a very significant pattern of growth (Figure 3).

Average growth rates are much faster at the bottom end of the distribution in 1992 and in fact negative for households in the highest percentile groups. The very poorest groups show very large increases in their consumption levels over this period, and these high growth rates (combined with little change in inequality) have clearly been a major factor behind the large reduction in poverty over this period.

A further analysis of poverty transitions by 1992 consumption decile (Annex Table A.3) shows that even in the first decile more than 40% of households had moved above the poverty line by 1999; and the corresponding proportions are above 60% in the next four decile groups. This is not a case of poverty reduction just benefiting those close to the poverty line; rather it shows that many of those a long way below the poverty line in 1992 could also escape poverty. The other side of this is descents into poverty, with more than a fifth of those that were non-poor and in the sixth to ninth deciles in 1992 falling into poverty in 1999. Again it is not just a case of those close to the poverty line in 1992 falling below it, but also households that were substantially above it.

The panel data shows considerable mobility of consumption levels, much of it upward but also downward. This will obviously reflect a number of factors, including the volatility of income levels. But the important conclusion from this analysis is that the poorest (whether defined as the chronic poor or the lowest decile(s)) clearly participated substantially in the growth experienced over this period. It will clearly be very valuable to seek to understand the nature of this growth and how the poorest were able to participate – for example looking at the activities in which they were engaged and how these activities, or the returns to them, changed over the period.

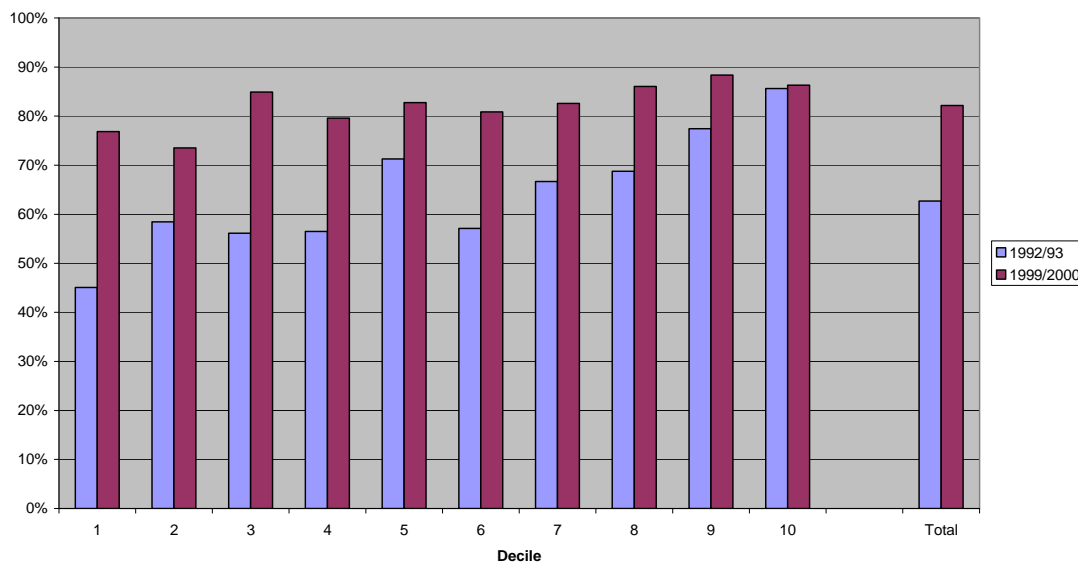


4 Growth and non-income indicators of poverty

Just as it is valuable to complement the income growth incidence curves with an analysis of the changes experienced by specific households using the panel data set, the same applies to the corresponding non-income analysis (Anderson, 2005). To what extent are the poorest households in 1992 able to realise improvements in non-monetary indicators of their wellbeing? The analysis here focuses on income decile groups², looking at changes in the same indicators considered by Anderson (2005). The choice of indicators largely reflects data availability, but the significant focus on education also reflects its policy importance over this period with the introduction of the Universal Primary Education (UPE) policy in 1997.

Primary school enrolment rates improved substantially over this period from around 63% in 1992 to 82% in 1999, which would seem to reflect the impact of the introduction of UPE. Further, it is clear that there were substantial increases among the poorest groups in income terms (Figure 4) where enrolment rates were lowest to start with. In the lowest decile for example the enrolment rate increased from 45% to 77% over this seven year period. Average years of education for secondary school age children completed also increased over this period in all decile groups (Figure 5), but slightly more so among poorer groups so reducing the educational differential with children in this age group resident in richer households.

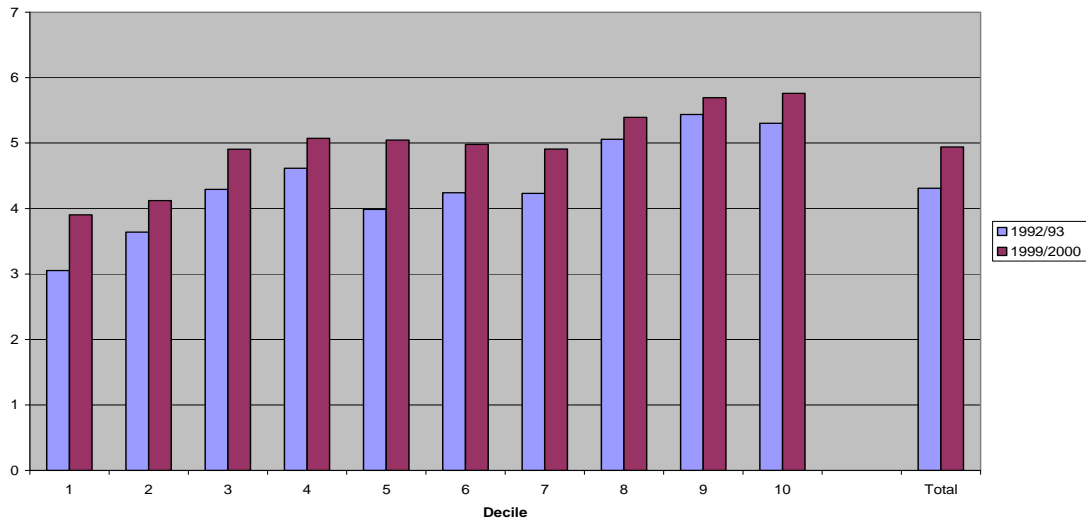
Figure 4.1: Percentage of primary school age children enrolled in school, by income decile, 1992 and 1999



² The focus on income decile groups (equivalent to conditional non-income growth incidence curves) is because the panel based analysis is no meaningful for number of years of education because of the limited age range over which this variable is – for good reasons – defined (13-18 years).



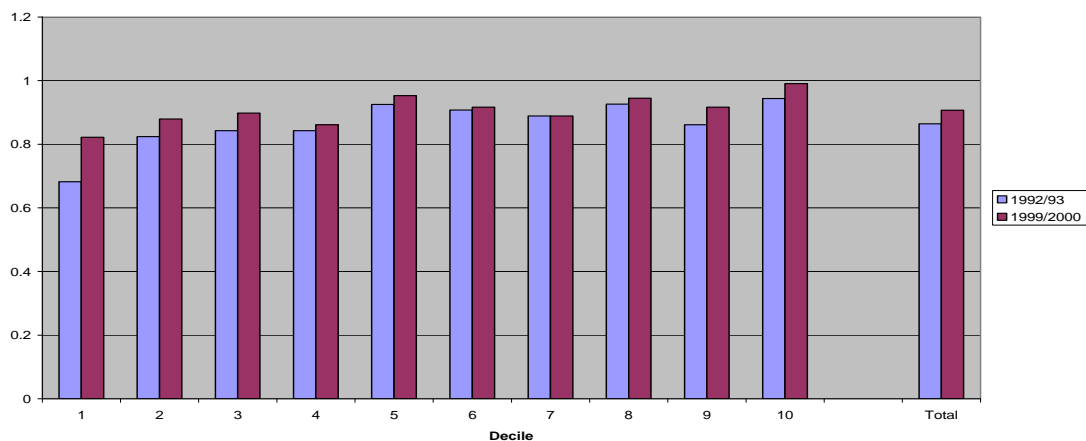
Figure 4.2: Years of education completed by children aged 13 to 18, by income decile, 1992 and 1999



Primary school completion rates remain very low³, but have increased over this period again including for children in poorer households (Annex Table A.2).

In terms of housing characteristics, the poorest also shared in the general improvement of sanitation facilities over this period (Figure 6), but still in 1999 none of them had access to electricity (Figure 7). The data suggest that fewer households have access to a reliable source of potable drinking water, though as suggested by Anderson (2005) there may be an issue of comparability of the indicator (Annex Figure 3). The proportion of children that had received the DPT vaccination actually decreased over this period nationwide, but actually increased for the households in the poorest decile group in 1992 (Annex Figure A.4).

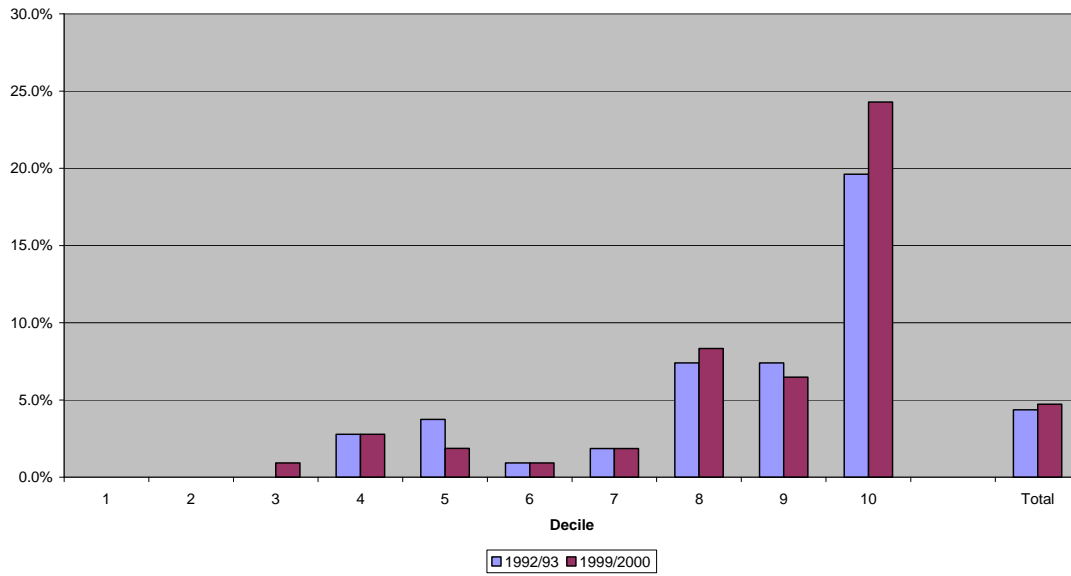
Figure 4.3: Percentage of panel households having adequate sanitation facilities, by income decile, 1992 and 1999



³ Clearly it is too soon to observe the effects of UPE in these figures.



Figure 4.4: Percentage of panel households using electricity as their lighting source, by income decile, 1992 and 1999



In general the patterns shown by the panel data analysis of non-income indicators are similar to those shown for the full sample (Anderson, 2005).



5 Conclusions

While the focus on the panel data does not give a significantly different picture of the change in the situation of the poorest in relation to non-income indicators, it does give important additional insights on the nature and impact of income growth. In particular it shows that there is considerable mobility in income terms in this panel data set, such that many of the poorest in 1992 had substantially increased their consumption levels by 1999 to an extent that enabled many to escape from poverty. The magnitude of changes revealed by the panel data is much greater than that suggested by the growth incidence curves alone because the latter do not take the mobility into account.

This mobility though is downward as upward; just as many poor households have been able to escape poverty over this period, many others have fallen into poverty. For many the escape from – or descent into – poverty is unlikely to be permanent. In large measure this reflects the volatility of many income sources, and is a major source of vulnerability which can even affect households that are quite far above the poverty line.

An important measurement point is that the composition of the very poorest seems to be quite fluid in an environment of fast growth such as Uganda over this period. It also suggests that identifying the poorest in income terms based on a one-off survey, and so not taking account of dynamics, will result in a substantial number of misclassifications.

This paper represents only a preliminary analysis which clearly needs to be complemented by an analysis of why households are making the poverty transitions shown by the panel data. Econometric analysis of correlates of poverty transitions provides some insights on this (e.g. Lawson et al., 2005), but this needs to be complemented by more in depth qualitative and quantitative analysis.



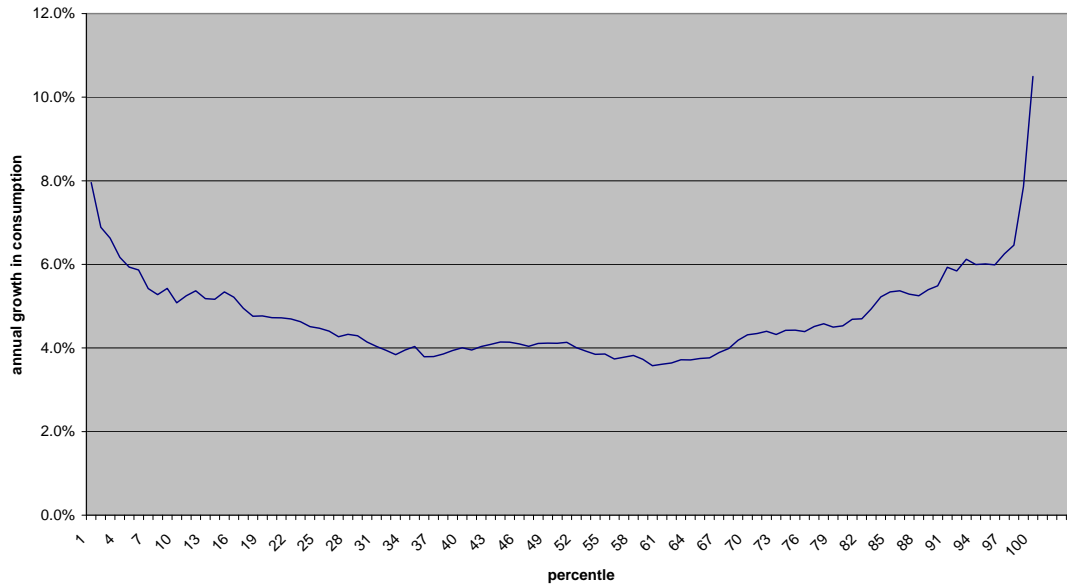
References

- Anderson, E. (2005), "Growth incidence analysis for non-income welfare indicators: evidence from Ghana and Uganda", parallel paper prepared for the DFID Reaching the Very Poorest Team, March.
- Grant, U. (2005), "Pro-Poor Growth and the Poorest", parallel paper prepared for the DFID Reaching the Very Poorest Team, March.
- Lawson, D., A. McKay and J. Okidi (2005), "Poverty Persistence and Transitions in Uganda: A Combined Qualitative and Quantitative Analysis", mimeo., University of Bath and University of Manchester.



Annex Tables and Figures

Annex Figure A.1: Growth incidence curve: panel households, 1992-99



Annex Table A.1: Changes in extreme poverty status in the 1992-99 panel

1992 poverty status	1999 poverty status	Percentage of panel households
Extreme poor in 1992		28.7
	Of which still extreme poor in 1999	5.9
	Of which not extreme poor in 1999	22.7
Not extreme poor in 1992		71.3
	Of which extreme poor in 1999	7.7
	Of which still not extreme poor in 1999	63.6
All households		100

Source: author's computation from the Uganda panel dataset.

Annex Table A.2: Average growth rate by dynamic poverty status

poverty status over 2 periods	Mean annual growth rate of consumption	Std. Deviation
chronic poor	3.5	8.1
Descending	-9.1	4.8
Escaping	14.5	7.7
never poor	3.2	7.9
All	5.2	10.4

Source: author's computation from the Uganda panel dataset.



Annex Table A.3: Average Growth Rates by Poverty Status and Location

Poverty status over 2 periods	Location		Region				All
	Rural	Urban	Central	Eastern	Western	Northern	
chronic poor	3.3	5.0	4.1	5.3	3.9	1.5	3.5
descending	-9.2	-7.6	-7.2	-8.4	-8.7	-12.1	-9.1
escaping	14.4	15.0	13.9	14.5	15.7	12.7	14.5
never poor	1.5	5.7	4.8	1.6	2.8	0.6	3.2
All	4.9	7.1	6.3	6.0	5.4	1.4	5.2

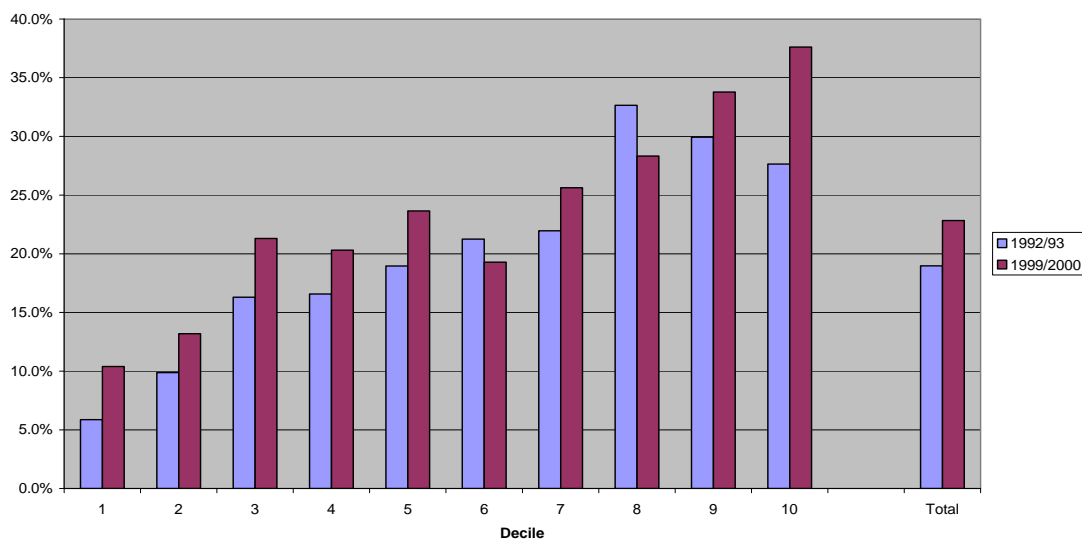
Source: author's computation from the Uganda panel dataset.

Annex Table A.4: Movements into and out of poverty by 1992 income decile group

1992 decile group	Percentage of households in decile group that are:				Total
	chronic poor	descending	escaping	never poor	
1	56.1		43.9		100
2	38.9		61.1		100
3	36.1		63.9		100
4	38.9		61.1		100
5	24.3	3.7	63.6	8.4	100
6	0.9	23.1	0.9	75.0	100
7		28.7		71.3	100
8		22.2		77.8	100
9		20.4		79.6	100
10		9.3		90.7	100
Total	19.5	10.8	29.4	40.3	100

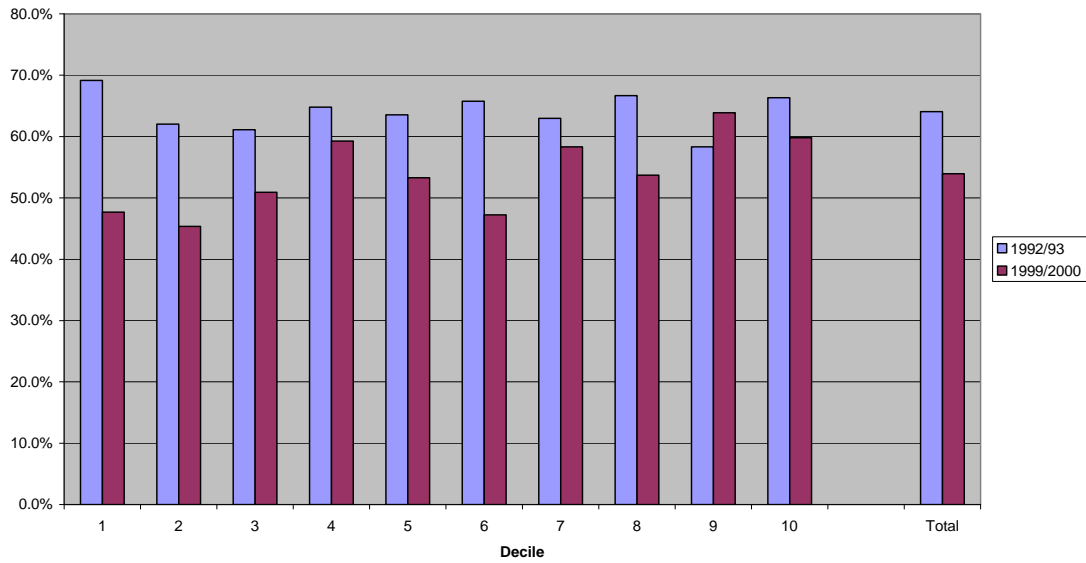
Source: author's computation from the Uganda panel dataset.

Annex Figure A.2: Percentage of children aged 13-18 years that have completed primary school, by income decile, 1992 and 1999





Annex Table A.3: Percentage of panel households with access to a good source of drinking water, by income decile, 1992 and 1999



Annex Table A.4: Percentage of under-five children vaccinated against DPT, by income decile

