Combining Quantitative and Qualitative methods in Assessing Chronic Poverty: The Case of Rwanda[i]

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1. Introduction

This paper aims to demonstrate the value, as well as the need, of employing a multidisciplinary approach to the analysis of chronic poverty in Rwanda. By combining methods and disciplinary perspectives, we are able to explore the current lack of understanding of chronic or persistent poverty (Hulme, Moore and Shepherd, 2001) in Rwanda. A specific focus on chronic poverty is important for the understanding of poverty, with the persistent nature of much deprivation being a key message in most qualitative poverty assessments, but it is important also for policy responses (McCulloch and Baulch, 2000), often predominantly informed by quantitative analysis.

At a methodological level much analysis of chronic poverty to date has been based on quantitative data, in particular using panel data sets (Baulch and Hoddinott, 2000; McKay and Lawson, 2003). While this has been very informative, it also suffers from significant limitations, (in terms of the limited understanding it provides of the factors and processes underlying chronic poverty; the short time periods it typically focuses on; and its susceptibility to measurement error). As such there is a strong case for combining qualitative and quantitative methods to understand the extent, pattern and nature of chronic poverty. Moreover, in many countries – as in the case of Rwanda – the absence of panel data and the importance of the issue of chronic poverty means that a different approach is essential.

In Rwanda chronic poverty has not focused significantly in the poverty reduction dialogue, despite the fact that there is strong a priori reason to believe that it is likely to be a very important phenomenon (taking account of its very low GNI and HDI values; high levels of poverty; relatively high inequality; severe land pressures; quite high incidence of HIV/AIDS; and the enduring legacy of the devastating 1994 genocide and civil war; as well as anecdotal evidence). The absence of focus on chronic poverty partly reflects a lack of evidence. This paper therefore was motivated by a very pragmatic concern: to form a relatively quick judgement on the nature of chronic poverty in Rwanda drawing on existing information sources, which could feed into existing policy debates around the Poverty Reduction Strategy.

The paper draws on an appropriate nationwide participatory poverty assessment in conjunction with a conventional one off household survey. The specific tools were each conducted for other purposes and we do not claim that this represents an optimal methodology. Rather we argue that by combining them we can draw relatively quickly important insights about chronic poverty in Rwanda which could not be obtained from each source individually, and which have important policy messages. Indeed we also consider that there is much wider scope to combine qualitative and quantitative information in assessing chronic poverty.

This paper is structured as follows. The following section discusses the concept of chronic poverty, among other things setting out the case for drawing on both qualitative and quantitative methods in a multi-disciplinary approach. Relevant background on

Rwanda, including recent poverty findings, is presented in section 3, while section 4 discusses the participatory poverty assessment (PPA) that forms the basis of our analysis. Section 5 then explains how the PPA is combined with the household survey to identify chronically poor households in Rwanda. This then leads into a discussion in section 6 of the characteristics of those that have been identified as chronically poor, and shows that this core chronic poor group have important distinct characteristics that differentiate them from other poor households. Section 7 concludes, briefly discussing policy implications and focusing particularly on the value of a combined qualitative and quantitative approach in assessing chronic poverty.

2. Understandings of chronic poverty

Chronic poverty is generally understood as poverty that persists over a long period of time, which in different instances may be several years, a generation or several generations. The key point about chronic poverty is its past and perceived future persistence, the likely inability to escape poverty in any reasonable time horizon. Chronic poverty contrasts with transitory poverty where individuals and households move into and out of poverty over time, depending on factors such as the state of the harvest, prices or opportunities for wage labour. Different policy responses are likely to be appropriate to these two types of poverty (Hulme and Shepherd, 2003) – even though it is not always straightforward to make this differentiation precisely in practice.

The difficulty for many people of escaping from poverty and its persistence is an issue that features strongly in many participatory poverty assessments (including in the case of Rwanda here). Despite this, to date, discussion and analysis of chronic poverty have tended to rely on quantitative methods, using longitudinal or panel household survey data and focusing on income (or consumption) poverty. The focus on income poverty partly reflects the volatility of income/consumption, so that measures at a single point in time do not capture longer term dynamics well. This contrasts with several other aspects of well being where one off measures often can provide more insight about the past, including illiteracy, stunting and ownership of different categories of assets.

However, panel data typically cover relatively short time periods (generally a few years) and involve a limited number of waves (typically two or three observations). And the links between poverty persistence over horizons of a few years and those over substantially longer periods – a key aspect of chronic poverty – are not known. In addition, such panel data sets do not provide information about poverty status in the periods in between the years when households are observed.

Another significant issue is the effect of measurement error[ii]. This becomes important in analysing panel data, in that measurement error at the individual household level is often substantial. To the extent that this is idiosyncratic (random) measurement error, the volatility in income or consumption will be exaggerated, such that, without appropriate corrections for measurement error, a higher proportion of poverty appears to be transitory than is actually the case. While attempts are sometimes made to correct for the effects of measurement error, these are necessarily imprecise.

In addition, panel data are only available relatively rarely. For all of these reasons interest has focused on using quantitative indicators available at a point in time as proxies for chronic poverty. In particular attention has focused on poverty severity or

multidimensionality. While there are intuitive reasons for these proxies (and they sometimes appear to work quite well; Okidi and McKay, 2003), there may still be significant mobility among the severe poor as appeared to be the case for some households in the Kwa-Zulu Natal panel data set in South Africa (Aliber, 2001). In other words, the reliability of these proxies is not guaranteed. Further, and probably most importantly, moving beyond the income dimension and quantitative measures is important in seeking to capture better the multidimensionality of poverty and its dynamics as described, understood and experienced by individuals.

Drawing on qualitative studies in considering chronic poverty is therefore important and necessary. There are a number of ways in which this can potentially done, including life history studies or longitudinal village studies. Some – though by no means all – participatory poverty assessments (PPAs) also offer a valuable opportunity.[iii] In a number of PPAs, including the one for Rwanda used in this paper, respondents identify different categories among the poor; and stress the dynamic nature of poverty whereby some people can move in and out while many others are trapped in poverty. In the Rwandan PPA (Government of Rwanda, 2001) participants described the "abject poor" as those "persistently in poverty", with no means to change and who require direct assistance. Moreover, PPAs often help provide understanding of the causal and contextual factors underlying these different types of poverty, as well as the characteristics of these different categories of the poor.

A productive approach to thinking about chronic poverty is in terms of assets, in that the assets capture some element of dynamics. A lack of assets, or a lack of opportunity to use assets effectively, can be key factors underlying chronic poverty. A livelihoods framework (Ellis, 2000) can offer a useful approach (Hulme, Moore and Shepherd, 2001), in that is can also captures the key dynamic issues. This focuses on a range of assets (financial, human, natural, physical and social capital), as well as other key influences on livelihood strategies: factors modifying access (social relations, institutions and organisations); and contextual factors (trends and shocks – economic, physical, social etc.). Such an approach can be extended to incorporate political and security factors (see also Hulme et al, 2001, Table 5). This framework also helps in clarifying the links between chronic poverty and conflict or its consequences. The consequences of conflict for chronic poverty can be understood in terms of the destruction of a wide range of the above assets, many of which can be rebuilt only slowly if at all, and changes in the other factors affecting livelihood strategies. But also the relationship between chronic poverty and conflict is two way, with chronic poverty itself potentially being an important factor underlying conflict.

Chronic poverty reflects a lack of assets, but also the outcome of processes that exclude. Importantly, it is apparent that much of the analysis and perceptions outlined in qualitative work readily lends itself to this framework. For example, social pressures are often of particular importance, with some of the chronic poor often been seen by others, including other poor households, as undeserving or responsible for their own plight. The focus on social process and context and exploring understandings of persistent poverty adds an important aspect to a discussion of chronic poverty. Therefore the framework argues strongly for combining qualitative and quantitative approaches in thinking about chronic poverty and offers the scope to link with perspectives from other disciplines and traditions (e.g. social exclusion), although this paper will not focus on this.

Many aspects of chronic poverty, and especially the understanding of the social processes that underlie persistent exclusion or deprivation, are only amenable to a qualitative analysis. But the quantitative approach is of value in understanding the extent of access to some key assets (e.g. land or human capital) and the returns that different individuals are able to earn from these assets. If an appropriate methodology for identifying the chronic poor can be developed, a quantitative approach also offers the opportunity of understanding the extent and patterns of chronic poverty, as well as some of the characteristics of those that are chronically poor. We argue here that an appropriate methodology for quantitative work is one that draws insight and understanding from qualitative work.

3. Poverty in Rwanda: context and quantitative patterns

Rwanda is one of the poorest countries in the world, ranked 158th out of 175 countries in terms of its HDI and 153rd out of the same 175 countries in terms of per capita GDP in PPP US$ (UNDP, 2003). The country is most renowned for the genocide of 1994. The violent legacy of the genocide, civil war, an authoritarian state and a decade of economic decline has been compounded in recent years by continuing regional instability, a highly vulnerable rural majority, political and social fragility, extreme environmental degradation, the highest population density in Africa, high levels of inequality, an emerging HIV/AIDS epidemic, severe skills shortages and severely limited market and trade links. However, notwithstanding this inauspicious background, Rwanda has experienced quite fast positive growth performance since 1996.

Recent evidence on poverty in Rwanda comes from two main sources: an integrated household survey (EICV[iv]) carried out between 1999 and 2001, and a nationwide participatory poverty assessment (PPA) undertaken in 2001. Based on the survey data, 60.3% of the population are identified as being poor in consumption terms relatively to a fairly austere poverty line (Table 1; Government of Rwanda, 2002a).

Table 1: Indices of poverty and extreme poverty in Rwanda by locality

	Population share	Numbers of poor (%)	Average depth poverty	Numbers of of extreme poor (%)
Kigali City	7.4%	12.3	26.1	4.5
Other urban	3.0%	19.4	29.5	9.8
Rural	89.5%	65.7	42.4	45.8
Total	100.0%	60.3	42.1	41.6

Source: computed from EICV survey, 1999-2001, taken from Government of Rwanda (2002a).

Relations between population and land are of particular importance in Rwanda both culturally and in understanding livelihoods and poverty. The Rwandan PPA noted that "Issues of land in rural areas are so crucial that they are on top of problems that impoverish people". Land pressure is cited as an important factor in creating the conditions for internal conflict and ultimately, genocide. Rwanda is a predominantly agricultural economy, with a high (and rapidly growing) population and small cultivatable

land area, with significant variations in fertility. Average land area per household was only 0.84ha in 2002 (Mpyisi et al, 2003), and land ownership is highly unequal (the Gini coefficient for land ownership was 0.594 in 2000). A large majority of agricultural households cultivate less than 0.7ha, the figure the Ministry of Agriculture regards as necessary to feed a typical Rwandan family. Nearly 90% of the population lives in rural areas, within which there is relatively little non-agricultural activity.

Poverty is very strongly concentrated in rural areas (Table 1), reflecting a very high urban-rural differential. Within rural areas patterns of cultivation are relatively uniform though levels of poverty vary somewhat. The urban-rural differential is even sharper once consideration is taken of the depth of poverty, and for a lower poverty line, defined as a level where a household's total consumption measure falls below even the value of the minimum food basket. This urban-rural gap is one explanation for the relatively high level of inequality (the Gini coefficient in 2000 being 0.45), though there are also high levels of inequality within both urban and rural areas.

Further analysis (Government of Rwanda, 2002a) shows that poverty is highest by far among households reliant on own account agriculture or agricultural wage labour. Poverty is also strongly associated with inadequate land ownership (40.5% of agricultural households in the lowest consumption quintile own less than 0.2ha), and is higher among female widow headed households (partly a consequence of the genocide and civil war) compared to other groups. The Government's poverty profile provides much more detail on patterns of poverty in Rwanda, covering non-monetary as well as consumption dimensions (Government of Rwanda, 2002a).

Though these findings are important, they cannot provide information on chronic poverty given the one-off nature of the survey. For this we now turn to the national participatory poverty assessment for the insights that this provides on chronic poverty, both in its own terms and in combination with the household survey.

4. Insights from the Rwanda Participatory Poverty assessment

The participatory poverty assessment (PPA) whose results we use in this paper was conducted as part of Rwanda's Poverty Reduction Strategy process. It had four main objectives: to present an understanding of the poverty profile as seen by Rwandans themselves, to act as a tool for social mobilisation, to identify factors that affect welfare at household level, and to collect data for planning and budgeting purposes (Government of Rwanda, 2001).

By establishing a national training team, cascading that training to over two thousand facilitators and working closely with the Ministry of Local Government, the PPA was able to achieve wide coverage, generating information and discussion in each district in Rwanda covering all twelve provinces in the country. Nationally, PPA discussions took place at sector level, the second-lowest administrative unit in Rwanda, generally selecting one sector per district. Teams of two to three facilitators worked with communities, typically three hundred people per event, over a period of between three to five days. Discussions took place in the afternoons, after agricultural work was completed. A variety of participatory techniques were used, including mapping, to focus on six main areas: people's definition of poverty, at individual, household and community levels; social categories and their characteristics; mobility factors among categories; causes and

consequences of poverty; problems that affect community members; and strategies to address problems that affect the community.

In one region, Butare, the PPA was conducted in every cell (the lowest administrative level) of the province to deepen the analysis and provide a pilot for a community action approach, *Ubudehe*, using public resources to meet problems and opportunities identified in the PPA. Data gathered was aggregated to twelve provincial levels, approximately nine sectors per province, and ranked. It was not possible to get access to the original field reports (prepared in the local language, *kinyarwanda*) so conclusions below are drawn from a summary report and its accompanying data in tables aggregated to provincial level.

The PPA provides a rich picture of the variety of different experiences of poverty in Rwanda. This PPA is suited for analysing chronic poverty because of its national coverage, its detailed social disaggregation, and its focus on factors enabling upward or downward mobility between groups. This is in contrast to other PPAs which often have a lesser geographic coverage and focus much less directly on dynamics of poverty.

In defining causes of poverty participants highlighted ill health, ignorance, lack of livestock, reliance on insecure agriculture, scarce land, insecurity and conflict, poor quality housing and absent family members – often in prison. Social consequences of poverty were reported as loss of pride; lack of social support; pervasive feelings of loneliness, lack of dignity and a lack of openness amongst communities.

Across all provinces, more than half of all responses on the causes of poverty grouped around five factors: agriculture, lack of training, culture, land and health. Agriculture was mentioned as a cause of poverty much more frequently than the other leading factors. In identifying what it was about agriculture that caused poverty, two factors were mentioned three times as often as the other nine; bad weather and lack of livestock/manure. In relation to land the responses were more concentrated; land was reported as small, unfertile and third ranked, scarce. Under training and culture the most frequent responses stressed ignorance, mismanagement of resources and idleness. These responses are consistent in other reporting from the PPA where participants discussed issues facing them. Within agriculture, manure features strongly with a lack of domestic animals mentioned in nine of the twelve provinces and lack of fertilisers in eight.

In identifying causes of escaping from poverty, participants in the PPA identified two key areas twice as often as others: access to support and knowledge, and wage work outside of agriculture. Agricultural wage labour is characterised as being very insecure, with pay being poor or often absent; while production levels on most households' very small farms are low. Livestock is also regarded as a key asset, in particular as a source of manure but also in terms of achieving respect.

By contrast participants' responses about descents into poverty most frequently mentioned illness, mismanagement of resources and war. Looking at land specifically, the most mentioned cause was parcelling of land because of inheritance, followed by expropriation and selling of land. These vary by province which accords with particular socio-economic histories of the different provinces, for example participants in *Kigali ville*, an urban and peri-urban area, most frequently mentioned expropriation.

As part of the PPA process respondents identified and defined social categories for their households, providing the characteristics of these groupings. Communities were free to identify groupings as they chose, and unsurprisingly there were differences in the groupings used in different communities. While a wide range of different groupings were identified (around 30), some were specific to a very small number of communities or otherwise very specific and used very infrequently (e.g. "the tramp" or "the wealthy with sweet potatoes and beans"). However, six key categories were mentioned by participants across all twelve provinces in Rwanda. These groupings, and their associated characteristics as summarised in the Rwanda PRSP (Government of Rwanda, 2002b), are presented in table 2 below.

Table 2: Poverty Categories in the Rwanda PPA

Category of Household	Characteristics
Umutindi nyakujya (those in abject poverty)	Those who need to beg to survive. They have no land or livestock and lack shelter, adequate clothing and food. They fall sick often and have no access to medical care. Their children are malnourished and they cannot afford to send them to school.
Umutindi (the very poor)	The main difference between the *umutindi* and the *umutindi nyakujya* is that this group is physically capable of working on land owned by others, although they themselves have either no land or very small landholdings, and no livestock.
Umukene (the poor)	These households have some land and housing. They live on their own labour and produce, and though they have no savings, they can eat, even if the food is not very nutritious. However they do not have a surplus to sell in the market, their children do not always go to school and they often have no access to health care.
Umukene wifashije (the resourceful poor)	This group shares many of the characteristics of the *umukene* but, in addition, they have small ruminants and their children go to primary school.
Umukungu (the food rich)	This group has larger landholdings with fertile soil and enough to eat. They have livestock, often have paid jobs, and can access health care.
Umukire (the money rich)	This group has land and livestock, and often has salaried jobs. They have good housing, often own a vehicle, and have enough money to lend and to get credit from the bank. Many migrate to urban centres.

Source: Government of Rwanda, 2002b.

Respondents describe the characteristics of these categories in some detail although the precise characteristics that are mentioned vary from case to case. Those reported in Table 2 above focus on characteristics that are reported most frequently and within each of the twelve provinces.

The detailed results of the PPA show that for the *umutindi nyakujya* (the abject poor) by far the most frequently mentioned characteristic is the need to beg to survive. They are referred to as people who "have suffered so much on the earth that only death can liberate them". Other common characteristics of this group are absence of shelter (living in others' houses or buildings devoted to public activities), landlessness (so having to work for others) and poor health; further those in this group suffer from constant hunger, ignorance, loneliness, a lack of respect and discrimination.

The most striking characteristic of the very poor/*umutindi* is that working for others as a single category is mentioned twice as often as the next three categories; malnutrition, children out of school and poor housing. Very small land features eighth in ranking by participants, perhaps as an acknowledgement that having any land at all is uncommon for this group of people. For the *Umukene* or the common poor the top three characteristics are: "cannot afford enough for the family", "works for others, for food and once in a while works on own land" and "lack of sufficient land". We interpret this as some groups of people in this category having smaller plots of land combining own account agriculture with wage labour. This is backed up in the summary report which notes that they commonly have insufficient land which they rent out in order to feed their family or that the common poor are only able to work their land towards the end of the rainy season reducing the chances of a decent harvest. The fourth ranked characteristic is "children out of school". The summary report notes that people in the two lowest categories have no livestock whilst the *umukene* have no or insufficient livestock.

In the next category, the *Umukene wifashije* or the resourceful poor definitions abruptly turn from negative to positive. The first four in ranked order are, "children attend school", "has cattle and livestock", "has access to healthcare" and "has cash". However not having enough food and land rank sixth and seventh, perhaps implying continued need in this area.

The summary report uses these categories to examine implications for resources and labour and access to facilities such as health. On health the summary report notes that the poorest two groups have no access to health care and are always sick. The poor are seen as having frequent or permanent illnesses and often also lack access to health care. On labour, the report notes that from the poor downwards people live by working for others. It also brings in a relational aspect in that the resourceful poor are the ones who employ the very poor in good times.

5. Combining methods to identify chronically poor households in Rwanda

Both the PPA and the household survey results provide strong reason to support the casual intuition of widespread chronic poverty in Rwanda. The survey shows a high depth of poverty, large numbers in rural areas especially with very low consumption levels, large numbers of stunted children, and many agricultural households owning very small areas of land. The PPA emphasis on lack of land, livestock, persistent hunger and lack of training/skills, among other factors, strengthens the suggestion of chronic poverty from which households cannot easily escape. Again from the PPA, the effects of ill health risk to plunge a household into persistent poverty and/or make it yet more difficult to escape from chronic poverty. Insecurity, discrimination and the lack of social

support are other major factors expected to be drivers or maintainers of poverty and reported widely in the PPA.

Our approach in this paper is to combine the detailed insights from the PPA with those available from the household survey. We build on information from the PPA and the different categories it identifies according to reported perceptions of poverty status, interpreting these in chronic poverty terms, and then seek to identify households with these chronic poverty characteristics in the household survey data. This approach inevitably involves significant elements of interpretation and subjectivity, but it is a valuable exercise because of the additional characteristics of the chronic poor that can be obtained from the survey – including some quantification of the key characteristics associated with the chronic poor.

In terms of the six PPA social categories, the first four are clearly poor while the fifth and sixth are not. In the categories, the first two, the *umutindi nyakujya* and the *umutindi* correspond to concepts of chronic poverty, in terms of persistence attributed to these groups in the PPA, and to the livelihood framework described earlier. Whether or not the *umukene* should be considered as chronically poor is perhaps more an issue of debate. However, we argue that many in this group should be viewed as chronically poor; persistence is still mentioned by PPA participants in relation to this group. And many of the characteristics are ones corresponding to commonly concepts of chronic poverty (Hulme et al, 2001) or possessed by the chronic poor typically identified by panel data in other similar countries, such as Uganda. The fourth category, the *umukene witashije* are predominantly not chronically poor.

While distinctions between the groups are not always clear at the margin, given some similarity in certain characteristics across groups, there does seem to be a clear distinction drawn in meaningful and consistent terms between the *umukene* and the *umukene witashije*. We argue that the first two categories and many in the third category identified by the PPA can be regarded as the chronic poor in Rwanda, though we cannot claim a one to one mapping between these concepts; in particular some of the *umukene* category might be better considered as among the transitory poor. We also argue that the consistency of response shown across the PPA in defining these groups means that this information can be 'generalised' to lend itself for the combination with other representative data and is therefore a crucial building block (Hentschel, 2001).

At the same time it is important to recognise that there are important limits to the extent to which matching the first three categories to the survey can be achieved with confidence. To start with, the first group, some of the *umutindi nyakujya* are likely not to be covered in the household survey as they are described as being characterised by lack of shelter: "[They] have no support at all. Most of them live in others houses, the rest still stay in buildings devoted to public activities or stay in small huts". Second, while many of the characteristics used to describe the groups are available from the survey questionnaire, others are not or are not easily interpreted in terms of the information in the survey (e.g. "eat badly"), while other characteristics may be not applicable for some households (e.g. school attendance for households that do not have school age children). Third some important characteristics overlap across the groups, partly because the distinctions are not easily expressed in precise terms and different communities may legitimately have different understandings of the distinction between *umutindi* and *umukene* say. For instance in either of these groups, household members may work for others, have a small amount of land or not send their children to school.

For this reason, we seek to identify chronically poor households that are *umutindi nyakujy, umutindi* or *umukene* without seeking to distinguish them. A number of issues will arise in trying to identify this group of households in the survey. Obviously this can only focus on characteristics in the PPA on which information is available in the survey, but that still provides many characteristics common to both: economic activity; ownership of land and livestock; use of education and health facilities; food consumption levels; housing quality; keeping seeds. There is an issue though of which criteria to privilege in identifying the chronic poor from the survey, and how many conditions to require. If we require survey households to possess too many of these characteristics, then this risks identifying only a very small number (who are almost certainly chronically poor). If we require too few then this may risk including households that are not in fact chronically poor even if deprived according to one criterion. Thus there is a trade off between type one and type two errors (as in statistical hypothesis testing) in applying this classification. A second issue noted above is that some characteristics are relevant only for a subgroup of households; it is not possible to assess whether a household used health care facilities unless a member was sufficiently ill over the time horizon covered by the survey for this to be relevant.

For these reasons it will not be possible to identify this category of chronically poor households comprehensively from the survey. It is necessary therefore to choose criteria on which this identification can be made. The criteria that we have used are those that are consistently reported in the PPA as being the most important characteristics of these three categories, which are meaningful for all households and which offer the possibility of definition in more precise terms. The criteria adopted are as follows:

(i) The household's main activity is own account agriculture; agricultural wage labour; or none (i.e. no-one in the household works); and
(ii) The household cultivates less than 0.05ha per adult equivalent; and
(iii) The household does not own any of the following livestock: cattle, sheep, pigs or goats.

Again this is by no means an optimal approach to identifying chronic poverty in Rwanda, and indeed risks to underestimate chronic poverty substantially. The focus of this paper is to try to use existing data sources, designed for other purposes, to identify a clearly chronically poor group (probably the chronic ultra-poor) and consider to what extent they have distinctive characteristics.

As regards the choice of these specific criteria to identify this chronically poor group, the PPA repeatedly highlights the dependence of these poor groups on working for others; "from the poor downwards, we have people who mostly live working on others' farms" or on very marginal household farming activities, while others may not work at all – particularly the *umutindi nyakujya*.[v] Cultivating a small area is also repeatedly mentioned. The *umukene* has people with small land who say that "even if all the agricultural inputs were made available the products could not make the household survive" (although the strict criteria adopted are likely only to identify a subset of this group). The choice of the threshold for land size is clearly arbitrary, but focuses on very small holdings. As such we are probably focusing on the chronic ultra-poor, but in any case we will examine the sensitivity of the results to a different threshold below. Having no or only minor livestock is similarly stressed in PPA as an important characteristic of the poorest two

groups and relates importantly to land: "She is characterised by low harvest because of his/her small land with no livestock to bring manure".

These issues are relevant to almost all rural residents given that they almost all rely on agricultural activity in some form or other, as well as some (semi) urban residents. Interpretation of these criteria in specific terms is highly subjective; we have chosen 0.05ha per adult as this represents very marginal cultivation, much below the standard minimum requirement mentioned above (the average rural household comprises 5.4 adult equivalents); we will discuss sensitivity of the results to this threshold later. In applying the livestock criterion have not excluded the possibility that households that are clearly chronically poor according to other criteria might still possess low value livestock that do not produce manure, such as poultry or rabbits. The criteria adopted obviously do not take into account of land quality, frequently mentioned in the PPA and of which there are large variations (hilltops, steep slopes and valley bottoms), but the survey does not give the information to assess this.

Given these criteria the focus will implicitly be more on rural poverty, where the vast majority of poverty is found and also where the PPA criteria are more meaningfully interpreted, but it will also cover relevant forms of urban poverty (the non-working and those engaged in marginal agricultural livelihoods).

In adopting this definition, we have chosen not to use the level of food expenditure, not because perpetual hunger is not a major aspect of chronic poverty (the PPA strongly confirms this) but rather because of a concern that, at the lower end of the distribution, food expenditure may be underestimated. However, as part of a wide sensitivity analysis we will shortly compare the group identified here with those with low levels of food expenditure and other criteria that have not been used to assess the extent of chronic poverty.

Applying these criteria enable a group of households to be identified that are clearly chronically poor according to both the PPA and the survey data. This group constitutes 13.5% of the Rwandan population or 14.8% of the rural population (Table 3). This is emphatically not an estimate of the extent of chronic poverty in Rwanda. These households are almost certainly chronically poor, assuming the identification criteria are meaningful (to be judged shortly). But equally they almost certainly represent only a subset of the chronically poor (perhaps the chronic ultra-poor, in that the land threshold is a very small area). The criteria applied are strict and this, plus the need to satisfy different criteria simultaneously, means that many chronically poor households are likely not to be included. In addition, as discussed above, the *umutindi nyakujya* are unlikely to have been adequately covered in the household survey.

Table 3: Estimated Distribution of Chronic Poverty in Rwanda

Group	% of households in group defined as chronically poor
Locality:	
Kigali City	2.1
Other Urban	4.6
Rural	14.8
Main economic activity of h'hold	
Agricultural wage labour	36.9
Own account agriculture	15.1
Non-working	8.7
Rwanda	13.5

Source: authors computations based on PPA and EICV household survey.

Given that a number of alternative choices could have been made in identifying the chronic poor, it is important to assess the robustness of this identification – in other words are the households that have been identified genuinely chronically poor? We have assessed this in three ways in this paper.

First, the identification of the chronic poor privileged, for reasons explained above, certain characteristics of the three poorest groups in the PPA above others; to what extent does the chronically poor group identified in this paper display these other characteristics as well? This is appropriately judged in comparison with other households engaged in similar economic activity categories, among whom deprivation levels are also very high.

Other key characteristics of these poorest groups identified in the PPA that can also be considered from the survey include an inability to send children to school (a key characteristic in the two poorest groups, and of most households in the third poorest group); a lack of access to health care; and poor quality housing. The first two characteristics are key characteristics of the two poorest groups (*umutindi nyakujya* and *umutindi)* and of most households in the third group (*umukene*).

Information on these characteristics is presented in Table 4. Rapidly increasing primary school enrolment rates in Rwanda now mean that the majority of children of primary school age do attend school, or have done at some point. But the proportion of households where one or more does not, or never did, attend school are noticeably higher among the identified group of chronic poor compared to others in the same economic activity categories and especially compared to households in other economic activity categories. A significantly higher proportion of the chronic poor live in "badly constructed" dwellings[vi] compared to other groups. While these two results correspond to the findings of the PPA, use of health care facilities is low among all households in the economic activity categories from whom the chronic poor where selected, and are not much higher for the chronic poor compared to the others.

Table 4: Other Poverty Characteristics of Households identified as Chronically Poor

	% chronic poverty status		
	Chronic poor	Non-CP in same activity categories	All others
% of households with primary school aged children where one or more never attended school	34.1	28.7	18.3
% of households with primary school aged children, where one or more is not currently attending	40.8	34.7	23.9
% of households where one or more ill or injured member did not consult any health practitioner	59.2	61.6	46.9
% not owning any livestock	80.2	22.1	59.1
% in lowest quintile of consumption distribution	37.6	19.8	5.2
% in highest quintile of consumption distribution	4.9	14.1	61.4
% in dwellings with bad construction	17.1	8.3	2.1

Note: bad construction of a dwelling is defined as: straw roof; uncemented adobe or adobe brick walls; and an earth floor.
Source: authors computations based on PPA and EICV household survey.

In addition, the large majority of the chronic poor own no livestock at all, not even small livestock such as chickens. This contrasts sharply with those in the same category not identified as chronic poor, which is not surprising given the identification criteria used, but also compares unfavourably with the "all others" category of households who make their livelihoods predominantly outside agriculture.

A second criterion that can be used to assess the robustness of the identification of the chronic poor is to look at the extent to which this maps to the poorest groups identified in consumption expenditure terms. One of the features of poverty most strongly highlighted in the PPA is perpetual hunger. This cannot be identified directly from the survey data, but the survey data does provide detailed data on consumption of food from own production and on food purchases, which, if accurately reported, should be strongly correlated with the identification of chronic poverty used here. 37.6% of the chronic poor identified above are in the poorest consumption quintile, compared to only 19.8% among others in the same economic activity categories (Table 4). Many of the remainder of the chronic poor category are in the second consumption quintile, with only 4.9% are in the top consumption quintile. In the latter case this is likely to be a misidentification, due to either underreporting of land or livestock ownership or to over-reporting of consumption levels. The correlation coefficient between a household being chronically poor as defined here and in the first consumption quintile is positive (0.174) and highly

statistically significant (at the 0.1% level at least), although the magnitude is relatively small.

A third sensitivity analysis was to consider the extent to which the characteristics identified in Tables 3 and 4 above altered when different criteria were used to identify the chronic poor. If the land threshold is instead set at 0.1ha/adult equivalent (still much below the Ministry of Agriculture threshold referred to above) then 19.7% of the population is identified as chronically poor, with a very similar geographic distribution. Moreover the same contrasts shown in Table 4 between the chronic poor and the other groups continue to apply. If, returning to the original land threshold, the livestock condition had not been applied then 27.9% would be identified as chronic poor, now with a slightly higher proportion in urban areas. In other words there are quite a lot of households in these economic activity categories who only cultivate small areas of land, but nonetheless own livestock. Again though, the contrasts in Table 4 are broadly similar when this criterion is applied to defining the chronic poor.

The results of applying the criteria used for this paper appear to be plausible given that alternative approaches identify broadly similar patterns – although also would identify different groups of households, in particular if the extreme poverty or first consumption quintile criteria were used. However, we argue for the identification used in this paper because it builds strongly on the results of a PPA which clearly distinguishes persistent poverty from transitory poverty, and identifies key characteristics of the former. Moreover the criteria adopted here do not rely on the identification of variables which are inevitably difficult to measure in practice, specifically household consumption expenditure, and especially at the lower end of the distribution which is of greatest relevance here. And as already noted in section 2, in the extreme poverty approach, the extent of correlation between the depth of poverty and its duration is unknown.

In summary it is possible to be confident that the vast majority of the group identified here are indeed chronically poor, and we turn now to examine their characteristics as revealed by the household survey data, again with the intention of seeing how well these match to those reported in the PPA.

6. Characteristics of the chronically poor group

We turn now to consider the characteristics of the chronically poverty group identified above. Following from the definition, the incidence of this measure of chronic poverty is highest in rural areas (Table 3) though chronic poverty also exists in urban areas among those engaged in agriculture-related livelihoods (many other urban areas not being much more than a large village) or not working.[vii] By main economic activity (Table 3), more than one third of (the relatively small number of) households reliant mainly on agricultural wage labour are chronically poor, and 15% of the much larger group of own account farmers.

Table 5: Demographic Characteristics of Households by Chronic Poverty Status

	% chronic poverty status		
	Chronic poor	Non-CP in same activity categories	All others
% female headed	35.9	27.3	21.6
% female widow headed	29.9	21.9	15.8
Average household size	5.6	6.0	6.6
Average number of girls aged 5 to 15 years	1.03	0.99	0.89
Average number of boys aged 5 to 15 years	0.90	0.95	0.93
Average number of women aged 15 to 60 years	1.50	1.60	1.91
Average number of men aged 15 to 60 years	1.09	1.33	1.58

Source: authors computations based on PPA and EICV household survey.

The group of chronically poor households have distinctive demographic characteristics. As is very common in other studies, households defined as poor in consumption terms tend to be larger than average (Government of Rwanda, 2002a); but the opposite applies to the chronically poor (Table 5) in that these households are smaller than average. This is consistent with PPA findings which stress the prevalence of widows and absent family members in prison among the poorest categories. It also corresponds to findings of some qualitative studies suggesting that large household size is not necessarily a correlate of poverty as quantitative studies of income poverty almost always find it to be (White, 2002). This difference in the relationship between poverty and household size may be a consequence of the fact that PPAs often do not collect nationally representative data. In this case though the result, which is based on nationally representative data, may be a consequence of using what is in part an asset based approach.

Further explanation of this though is offered by considering the gender composition of chronically poor households. These are much more likely to be female headed (in most cases a widow) compared to the rest of the population. This was true comparing poor and non-poor households in consumption terms but it is much more striking here. In other words, having a female head seems to be particularly strong correlate of this extreme form of chronic poverty. And female headed households are smaller, on average 5.2 members compared to 6.3 for male headed households.

The gender difference is also apparent in terms of household composition. The proportion of household members that are female is 55.5% in chronically poor households compared to 52.3% in other households in the same activity categories. There are "missing men" in each of the categories of households here, especially in the 15 to 60 age group, and this is most striking in the chronically poor group. This partly

reflects migration, but among those aged around 15 years and above is also likely to be a direct consequence of the genocide and civil war (death, or men in prison or displaced). It is also consistent with the PPA findings mentioned above.

Table 6: Characteristics of economic activity by chronic poverty status

	% chronic poverty status		
	Chronic poor (CP)	Non-CP in same activity categories	All others
Percentage of members economically active	48.2	50.0	40.0
Percentage of households where one or more member works outside main household activity	11.1	10.1	69.7
Percentage of households where one or more member works more than 45 hours/week	20.0	21.0	76.1
Percentage of households where one or more member works less than 30 hours/week	46.6	40.8	30.9
Percentage of households where one or more member has a second job (simultaneous)	16.8	13.5	13.9

Source: authors computations based on PPA and EICV household survey.

There are also some important differences in economic activity terms between the chronic poor and others (Table 6). To the extent that this data is reliable, the chronic poor are much more likely to be underemployed in their main activity (work less 30 hours per week for example). This is not surprising given that the largest number are engaged in own account farming on a very small land area, but it is entirely consistent with PPA findings that many among the poorest groups can only farm for short periods of the year. The PPA though mentions "idleness" and "misuse of land" as important factors underlying poverty, as well as small and poor quality land areas. Households primarily reliant on own account agriculture or wage labour, whether chronically poor or not, generally have very undiversified livelihoods. Thus only 11.1% of chronically poor households have a member working in an activity other than the main household activity. Chronically poor households are much more likely to have one or more member working as an agricultural wage labourer compared to others (where hours worked typically are much longer), and are more likely to have one or more members engaged in a secondary activity (presumably partly reflecting underemployment). However, other chronically poor households though appear to suffer from "overemployment" (mostly agricultural wage labourers) though no more so than for other households in the same economic activity categories. This is likely to be a consequence of high dependency ratios and missing men".

There are also differences between the chronic poor and others in the same activities in that chronically poor households are much less likely to have even small livestock (generally chickens), and are more likely not to own any land at all. The chronically poor are less likely to cultivate most crops compared to otherwise similar non-chronically poor

households; but the differences are small for beans (a staple) as well as beer bananas and coffee (commodities that can be sold), and bigger for others such as sweet potato (a staple, but that requires better quality land). All of these factors are likely causes, as well as consequences, of very high levels of vulnerability and poverty.

Though this point is not stressed in the PPA, in fact the chronic poor may be more engaged with the market economy than other poor categories, because of their greater reliance on wage labour or secondary activities; their inability to cultivate sufficient amounts of food; and their slightly greater propensity to grow crops that can be sold, notably beer bananas. Consistent with this, according to the survey data the chronically poor purchase a much higher proportion of their food consumption (48.8%) compared to the non-chronically poor in the same economic activity categories (38.5%).

Some of these characteristics are different to those found if the chronic poor are instead identified as the extreme income poor or those in the first consumption quintile, and these are likely to be significant. Households in the first quintile are larger on average than those that are not (6.4 members compared to 5.9 members respectively), such that the presence as well of smaller households among the chronically poor may not be stressed; the same applies to the extreme poor. Focusing on the first quintile to define the chronic poor identifies a higher proportion of own account farmers and a lower proportion of households reliant on agricultural wage labour compared to the approach adopted in this paper – but the latter appears to be more consistent with what the PPA reports. In addition, households that are extremely poor purchase a lower proportion of their consumption (44.0) compared to those that are not (47.8%) again in contrast to the case for the chronic poor as identified here. In many other respects though the characteristics of the groups identified using these different approaches are similar.

Many of these characteristics of the chronic poor group identified here correspond quite closely to those mentioned in respect of these three poorest categories in the PPA, but the quantitative data here though has added a number of important additional perspectives, for instance on household composition issues, the importance of female-headedness among the chronic poor, the extent of (rather lack of) diversification of economic activities of the chronic poor, and the extent of their reliance on market transactions. Of course the qualitative approach of the PPA gives a number of additional, very important perspectives not available from the survey – not only on processes but also on the much wider category of assets in the livelihoods framework. Even though the PPA and surveys were not designed to be used together for this purpose, combining them has offered insights not available from either individually. This point about the value of combining qualitative and quantitative methods can be extended to the analysis of chronic poverty. Clearly this combination could be much more effective if this was taken into account in the research design stage.

7. Conclusions

This paper set as its principal objective to draw conclusions about chronic poverty in Rwanda of relevance to existing policy discourse drawing on existing qualitative and quantitative data sources. While we are not claiming to have estimated numbers comprehensively, the analysis in this paper established that chronic poverty is a quantitatively substantial (more than one million people in a population of just over eight

million) and geographically widespread phenomenon in Rwanda. This then identifies a need in the policy context to consider this issue further.

For example, we would suggest that any *ex-ante* consideration of policy choice on agricultural growth would need to pay greater attention to poverty persistence and to the aspects of analysis that we present here. The focus on agricultural commercialisation in the Poverty Reduction Strategy is undoubtedly important, but the chronic poor are likely to derive little direct benefit. The introduction of labour intensive public works could benefit many among the chronic poor depending on how such programmes are designed, but some chronically poor households appear to suffer from labour scarcity. Similarly, consideration of how this relates to proposed social protection mechanisms or promotion of community programmes, for example the *ubudehe* programme referred to above[viii], would also be important. We would also argue that part of this approach would be to further explore the experience of chronic poverty for Rwandans, in particular understanding the processes that reinforce persistent poverty. Some of these are already clear from the PPA, and sometimes unintentionally to the extent that responses reveal possible discriminatory attitudes towards the poorest categories.

Methodologically we set out to demonstrate the value and need of employing a multi-disciplinary approach to chronic poverty, even in a situation where we were not designing specific research tools for this purpose. The value is a level of analysis and understanding of chronic poverty that moves beyond its individual components by combining insights from well conducted qualitative and quantitative work. This has provided a better understanding of the nature of chronic poverty; its multidimensionality; and the key characteristics of chronically poor households in terms of information available from the PPA and household survey. The group we have identified is quite distinctive from the remainder of the poor; as the poor themselves report in the PPA.

This is the beginning of a conversation that we see as necessary between different data sources in examining chronic poverty. We argue that even from this, initial analysis, we are able to offer a better defined picture of chronic poverty in Rwanda than has been previously available.

We recognise that in setting criteria for analysing chronic poverty we have concentrated on the commonality between the data, in terms of labour, land and livestock. But in invigorating the debate we also stress the importance and rigour of the data individually; of orders of magnitude, patterns and correlations from survey data and on insights on the social context of persistent poverty in Rwanda and the heterogeneity of social experience beyond physical assets. In taking this approach further it is necessary to build strongly on the key insights from the PPA. Further, this paper has focused quite a lot on using the qualitative results to direct relevant quantitative analysis, but it is equally important to consider the implications of quantitative findings for qualitative analysis.

Analysing and presenting information in this manner is intended to and indeed can focus further policy and research attention on this issue. This has relevance in a context such as Rwanda where conventional methods for assessing chronic or persistent poverty, such as panel surveys are absent. But the value is also in offering an outline approach that moves beyond panel surveys in considering chronic poverty. Further embracing multi-disciplinarity is of particular importance in the study of chronic poverty, given the much wider conception of chronic poverty and of the processes that underlie it, such as exclusion, (or movements into and out of poverty) than simply analysing panel data and

monetary measures alone. That all said, it would be informative to undertake such an exercise in an environment where panel data was already available, to see to what extent chronic poverty identified using a conventional approach corresponds to that identified using combined quantitative and qualitative methods as here. There are also important lessons to learn from Indian village studies that have used qualitative as well as quantitative income measures of poverty to examine persistence (Lanjouw and Stern, 1991), as well as quantitative studies that have used non-income indicators.

Finally, there is the scope and opportunity to develop this further in employing sequential mixing of approaches and analysis. Mixing also implies a continued conversation between methodologies and approaches. We have asked ourselves how in the future, can the design and process of PPA work and survey work better draw from each others' strengths. This can contribute to better, more policy relevant, information collection and analysis in each case.

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End Notes

[i] Opinions expressed in this paper are those of the authors only, and should not be attributed to the UK Department for International Development.
[ii] Attrition is also another important issue in the analysis of panel data, though perhaps less important over the short time horizons typically considered for this purpose.
[iii] For instance, the analysis conducted in this paper would not be possible based on the widely-quoted Uganda Participatory Poverty Assessment.
[iv] *Enquête Intégrale sur les Conditions de Vie des Ménages*, conducted by the Direction de la Statistique.
[v] The information on main economic activity might be used as the basis for seeking to distinguish between the *umutindi nyakujya, umutindi* and the *umukene*, but as this is not the main focus of this paper we do not pursue this. But the characteristics used to describe these groups (Table 2) means that this distinction will be very hard to make. Later though we will compare those reliant on agricultural wage labour with those engaged in small-scale own account agriculture.
[vi] However, it is difficult to identify badly constructed dwelling using the survey findings –bad construction was identified here based on the materials used for the roof, walls and floor).
[vii] The geographic distribution of chronic poverty is broadly similar to the pattern of overall consumption poverty, though with two or three significant differences. In particular, Chronic poverty is highest (above 20%) in the provinces of Ruhengeri, Gisenyi, Butare and Cyangugu, but Cyangugu and Gisenyi are not among the provinces with the highest poverty level. Gikongoro, the poorest province in Rwanda in consumption terms, has levels of chronic poverty around average, partly because of relatively high rates of livestock ownership there.
[viii] *Ubudehe* is the continuation of the PPA process in Rwanda where the process of enquiry and discussion on poverty is supported by a collective action and problem-solving process, backed up with small grants from government to be used collectively in resolving those issues identified. As part of this process the communities also identified the poorest household in their locality to be a target for specific assistance from collective action.