CENTRO STUDI LUCA D'AGLIANO
DEVELOPMENT STUDIES WORKING PAPERS

N. 320

October 2011

Integrating Quantitative and Qualitative Data to Improve our Understanding of Poverty in Uganda

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INTEGRATING QUANTITATIVE AND QUALITATIVE DATA TO IMPROVE OUR UNDERSTANDING OF POVERTY IN UGANDA

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Abstract

This manuscript aims to deepen our understanding of poverty in Uganda, by integrating the country's qualitative and quantitative data, enriching information from one approach with that from the other, and merging the findings from these two approaches into one set of policy recommendations. The results show that this dual approach to poverty analysis enriches the discussion of poverty trends by drawing attention to aspects of poverty and well-being neglected by simple construction of poverty indicators.

1.1 INTRODUCTION

Poverty analysts in 'qualitative' and 'quantitative' traditions have been highly active in the policy debates of the past decades. This has been especially the case in Uganda, a country at the forefront of poverty analysis. While quantitative approaches have been dominant, the use of qualitative approaches has been increasing. This manuscript aims to evaluate the claim that the understanding of poverty as a whole is enhanced

by using both methods, and determine whether the result is possibly a bit more than the sum of the distinct contributions.

To illustrate, integrating quantitative and qualitative sources of data can be used to widen the formulation of vulnerability to poverty developed in Angemi (2011). For purposes of this analysis, the quantitative data come from the Integrated Households Survey (IHS) 1992/93 and the Uganda National Household Survey (UNHS-I) 1999/00 two wave panel covering 1,309 household.[1] This panel, spanning between 1992/93 and 1999/00, coincides with considerable changes in policy, in particular, liberalization of agricultural trade in the early 1990's, a coffee price boom up to 1995/96, and the adoption of a programme of Universal Primary Education in 1997.

The qualitative data come from the Uganda Participatory Poverty Assessment Processes (UPPAP, 2000, 2002). These represent an attempt to bring together the voices and perspectives of the poor into central and local governments' policy formulation, planning and implementation. As such, they highlight the complexity of poverty, while revealing its diversity by region, location, and socio-economic status.

Between 1992/93 and 1999/00, the national incidence of vulnerability to poverty declined from 57% to 25% of the population (Angemi, 2011). Together with the finding that during the same period poverty dropped from over one half of the population to nearly one third, this evidence supports the claim that the period

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[1] The IHS and the UNHS-I both aim at collecting data on all socio-economic aspects of the household comprising household characteristics. Both are spread over a period of 12 months adopting IPNS design (Interpenetrating Network of Sub-samples), and draw on a large sample of approximately 10,000 households. The wide coverage of different sites is a particular strength of the data. In turn, the IHS 1992/93 and the UNHS-I 1999/00 cover 1,018 and 1,400 communities.

between 1992 and 2000 may mark the transition of Uganda from recovery to fresh growth (Appleton, 2001b).

In view of UPPAP's (2000) findings, it is possible to add texture to the seemingly narrow definition of household vulnerability presented above. In addition to noting that vulnerability varies with gender, age, ethnicity, occupation and social status, UPPAP participants identified vulnerability as one of the primary causes of poverty in Uganda. Local people defined vulnerability as (i) the likelihood that a person or group of people who were currently breaking even would deteriorate and eventually result in the person or the group becoming poorer; (ii) a condition in which an event or situation can easily predispose one to the likelihood of becoming poorer; and (iii) inability of some members of the community to meet their basic needs exposes them to poorer living standards (UPPAP, 2000).

While survey data can be further analysed to describe which households succeed in becoming less vulnerable, thereby increasing their chances of moving out of poverty, qualitative data is more suitable to explain how these households manage to improve their welfare status. Borrowing from Angemi (2011), table 1.1 illustrates the vulnerability path at the national level, and by location, economic activity of the household, dependency ratio, and sex of the household head. According to the data, the majority of households who were vulnerable in 1992/93 successfully managed to overcome their vulnerable status by 1999/00 (62%), and the majority of those who were not vulnerable in the first period remained so by the end of the decade (92%). This conclusion holds true even at the regional level, with the exception of the northern region. In northern Uganda, 90% of households who were vulnerable in

1992/93 remained vulnerable by 1999/00, while 48% of those who were not vulnerable in the first period became vulnerable by the end of the decade.

In addition, households with a low dependency ratio found it relatively easier to improve their social status than their respective counterparts. During the past decade, 70% (61%) of households with a low (high) dependency ratio who were vulnerable in 1992/93 became non-vulnerable by 1999/00.

Having quantified the incidence of household vulnerability, table 1.2 presents poverty vis-à-vis vulnerability trends between 1992/93 and 1999/00. The evidence supports the claim that during the 1990s Uganda experienced simultaneous reductions in poverty and household vulnerability. The proportion of poor and vulnerable Ugandans declined from 37% to 15%. In this economic environment, the proportion of poor, non vulnerable, Ugandans increased from 13% to 15%. While currently poor, these households (i.e. 169 and 199 in 1992 and 1999, respectively) are likely to move out of poverty in the next period.

This increase in the number of non-vulnerable Ugandans represents a marked improvement in households' ability to cope with risk and uncertainty. UPPAP (2002) communities identified hard work, access to gainful employment or multiple income sources, and increased access to land and property through purchase or inheritance, as the major factors explaining movement out of poverty. Hard work was largely associated with being healthy and able to engage in any work that may be available to earn an income. Multiple income sources were said to be important in improving risk management.

Land and livestock were viewed by some communities as the main engine for moving out of poverty through increased household income. Other priorities included having a small family, group formation, living for a longer period, which allows one to accumulate wealth, and acquiring skills and accessing education, particularly higher level education. Access to start-up capital and petty trade were also recognized as fundamental for upward mobility. Notably, petty trade was mentioned as particularly important in moving women out of poverty.

In Northern districts, movement out of poverty depended largely on the prevailing security situation. Upward mobility was experienced in periods of peace when people could access raw materials and petty traders were able to sell at a profit. Bad practices like corruption, theft, robbery and gun trafficking (especially by youth in the North) were also viewed by some communities as means of moving out of poverty in cases where opportunities for improving livelihoods were minimal. This possibly sheds light on why such practices have become increasingly common in the country (UPPAP, 2002).

This type of integration stands as the first example of potential gains from merging qualitative and quantitative approaches to improve poverty research and policy making. In view of the above, section 1.2 reviews the available literature, and section 1.3 provides an additional example of the advantages derived from the integration of Uganda's qualitative and quantitative sources of data. To this end, UPPAP's recognition of vulnerability as a threat to Ugandans' wellbeing, together with our survey based application to quantify its incidence present an opportunity for

deepening our understanding of a common area of interest to both researchers and policy makers: Chronic poverty. Greater insight into this argument will be elucidated in Section 1.3.

In an attempt to establish their relative strengths and weaknesses, and identify what kinds of integration seem most profitable in the Ugandan case, section 1.4 makes use of participatory evidence to guide survey based analysis. In doing so, it focuses on assessing the feasibility of examining, explaining, confirming, refuting, and/or enriching information from one approach with that from the other.

Finally, while summarizing the main conclusions, Section 1.5 highlights areas for improving research design and poverty analysis, while merging the findings from the two approaches into one set of policy recommendations.

1.2 LITERATURE REVIEW

Qualitative and quantitative approaches to poverty analysis have a considerable contribution to make in furthering our understanding of poverty as a whole, and in helping to formulate poverty reduction strategies, policies and interventions. Each approach may capture and reflect reality in a way that might bridge the gap on many disagreements of poverty reduction strategies. Numerical information can be more easily aggregated, but it can miss out on nuance and texture. General coverage aids representativeness, but can lose context. Statistical inference can help in discussions of causality, but misses out on the power of inductive approaches (Kanbur, 2003).

The quantitative approach to poverty measurement and analysis is one that typically uses random sample surveys and structured interviews to collect data (mainly, quantifiable data) and analyses it using statistical techniques. By contrast, the qualitative approach is defined as one that typically uses purposive sampling and semi-structured or interactive interviews to collect data (mainly, data relating to people's judgements, attitudes, preferences, priorities, and/or perceptions about a subject) and analyses it through sociological or anthropological research techniques (Carvalho and White, 1997).

While recognisable to many, Hentschel and others question such a characterization of quantitative vis-à-vis qualitative approaches as being somewhat misleading. In Hentschel's (in Kanbur et al., 2001) own words, "often the terms 'quantitative' and 'qualitative' are used to describe both the methods of data collection as well as the type of data collected. But what is generally referred to as 'quantitative' methods often produce 'qualitative' data and vice-versa".

Booth and Hentschel (in Kanbur et al., 2001) offer a useful distinction between *types* of data on the one hand, and types of data collection *methods* on the other. On the latter, they propose the terminology of 'contextual' and 'non-contextual', meaning by the former methods that attempt to capture a social phenomenon within its social, economic and cultural context, while in the latter, the sampling, the interview schedule, the training of enumerators and other aspects of best practice survey technique are designed precisely to collect information that is untainted by the particularities of the context in which it is described (Booth et al., 1998). Booth and Hentschel prefer to reserve the term 'quantitative' and 'qualitative' for the types of data collected, although a more accurate terminology might be 'numerical' and 'non-numerical', and this would also avoid confusion with the more general usage of the terms 'quantitative' and 'qualitative'.

Sticking to the qualitative and quantitative terminology, Carvalho and White (1997) provide the following listing of the strengths and weaknesses of each:

Quantitative - Strengths: (i) makes aggregation possible, (ii) provides results whose reliability is measurable, (iii) allows simulation of different policy options. Weaknesses: (i) sampling and non-sampling errors, (ii) misses what is not easily quantifiable, (iii) fails to capture intra-household issues.

Qualitative - Strengths: (i) richer definition of poverty, (ii) more insight into causal processes, (iii) more accuracy and depth of information on certain questions. Weaknesses: (i) lack of generalizability, (ii) difficulties in verifying information.

Carvalho and White (1997) and McGee (2000) use the above to characterise quantitative approaches as having *breadth*, and qualitative approaches as having *depth*. Although a questionable classification on account of the fact that qualitative assessments cover a wider range of aspects of the same issue (e.g. multidimensionality of poverty) while quantitative approaches pay closer attention to detail, the key is to marry breadth and depth of one with those of the other. To facilitate this process, Carvalho and White (1997) distinguish the following processes to combine the best of qualitative and quantitative approaches: (i) integrating the country's qualitative and quantitative sources of data; and (ii) examining, explaining, confirming, refuting, and/or enriching information from one approach with that from the other.[2]

While the contours of clarity are slowly emerging from these attempts at typology and classification of types of data, there is clearly some way to go, and there is still room for confusion (Kanbur et al., 2001).

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[2] McGee's (2000) recent evaluation of qualitative and quantitative assessments of poverty in Uganda illustrates these principles, focusing on how the Uganda National Household Survey (UNHS) and the Participatory Poverty Assessment (PPA) can be better combined. The author's key recommendations include: (i) Using PPA to further examine downturn in some welfare indicators between 1995/96 and 1996/97 as derived from the UNHS; (ii) Using PPA insights to refine the UNHS questionnaire; (iii) given the findings of the PPA, include questions on risk and vulnerability in the UNHS; (iv) matching sample design for PPA and UNHS – with some households in common; (v) increasing standardization of poverty trends assessments in PPA; and (vi) attempt to repeat PPA for a second round at some first-round sites.

1.3 INTEGRATING UGANDA'S QUALITATIVE AND QUANTITATIVE SOURCES OF DATA: CHRONIC POVERTY REVISITED

According to Howe and McKay (2004), 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; its key feature is an inability to escape in any reasonable time horizon. The key point about chronic poverty is its past and perceived future persistence. 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. By implication, different policy responses may be required for tackling these two types of poverty.

The difficulty for many people of escaping from poverty and its persistence is an issue that features strongly in many participatory poverty assessments. In Uganda, chronic poverty has been attributed to a multitude of reasons that form a web of inter-related factors. This web includes lack of ownership or access to assets (such as land and cattle) at individual, household and community levels, which translates into lack of opportunities for employment, production or income generation (Chronic Policy Research Centre, 2005). Additional factors perpetuating chronic poverty include social pressures, with some of the chronic poor often seen by others, including other poor households, as undeserving or responsible for their own plight.

Research on chronic poverty in Uganda has focused on the two wave panel from the IHS 1992/93 and the UNHS 1999/00. In a recent publication, the Chronic Policy Research Centre (2005) estimated that 20% of the country's households were poor in

both 1992/93 and 1999/00. In light of these facts, it concluded that more than 7 million Ugandans, or 26% of the total population, were chronically poor.

While these conclusions are commendable in terms of both depth and scope of the analysis, they present a static depiction of chronic poverty. Recognizing that a household was poor in both 1992/93 and 1999/00 is not equivalent to saying that the same household was persistently, or chronically, poor in either 1992/93 and/or 1999/00. By implication, branding a household as chronically poor on the bases that it was poor in both 1992/93 and 1999/00, without focusing on both current and future implications of the household's socio-economic status, is not in line with the dynamic nature of household welfare.

In light of such shortcomings, this section builds on the relative strengths of qualitative and quantitative research methods to generate a novel definition of chronic poverty as a function of both current welfare and vulnerability. The inclusion of vulnerability, motivated by UPPAP (2000) and quantified by means of survey-based data analysis in Angemi (2011), marks our point of departure from the analysis outlined above. According to our definition, a household is chronically poor if simultaneously poor and vulnerable to poverty in the next period. This methodology provides an opportunity to assess chronic poverty in a more dynamic fashion. While static panel data comparisons, as articulated by the Chronic Poverty Research Centre (2005), result in a single estimate of chronic poverty across time periods, our methodology provides distinct points of reference to monitor the dynamics of chronic poverty in Uganda.

Table 1.3, column (1), shows that between 1992/93 and 1999/00 the proportion of households simultaneously poor and with a likelihood of being poor in the next period greater than 0.5 declined from 37% to 10% of the total population. This evidence concords with the findings from table 1.2 that among poor households the proportion of those who were also vulnerable declined from 74% in 1992/93 to 49% in 1999/00.

Table 1.3 goes beyond cataloguing the proportion of households simultaneously poor and with a likelihood of being poor in the next period greater than 0.5. Columns (2) and (3) gradually focus our measure of chronic poverty to poor households virtually guaranteed to remain poor in the next period, by reporting on the proportion of households simultaneously poor and with a likelihood of being poor in the next period greater than (0.75) and (0.90), respectively.

Column (3) shows that between 1992/93 and 1999/00 chronic poverty in Uganda declined from 11% to 5%. In addition, it captures important geographical differences in the spatial distribution of chronic poverty in Uganda. Clearly, chronic poverty remains a rural phenomenon. Most importantly, however, the evidence underscores the marginalization of the Northern region, which took place during the period under examination. In 1992/93 chronic poverty was relatively equally distributed across all regions of the country. While the Northern and Eastern regions took the lion's share with a total of 85% of the chronically poor, the Central and Western regions accounted for 10% and 5%, respectively.

In sharp contrast, the evidence from 1999/00 places 93% of the chronically poor in Northern Uganda. Clearly, large parts of northern Uganda have been devastated by

armed conflict and cattle-raiding, generating poverty and persistent (and often irreversible) depletion of productive assets. In this context, effective targeted interventions require a deeper understanding of the challenges of insecurity, living a life of dire need in protected camps, constant fear of abduction and death, loss of incentives to work, lack of productive assets and the feeling of being born in the wrong place.

1.4 MODELING POVERTY IN LIGHT OF THE UGANDA PARTICIPATORY POVERTY ASSESSMENT PROCESSES (UPPAP)

While there is little dispute that, over the past decade, Uganda has experienced remarkable economic growth, falling income poverty, and relative political stability, the contribution of different policy factors to these outcomes, as well as the regional distribution of poverty reduction, are disputed and can only insufficiently be explored using cross-sectional data alone (Deiniger and Okidi, 2003). Panel data allows a direct analysis of factors that contribute to changes in households' consumption expenditure as well as their poverty levels. This section makes use of participatory evidence to guide survey based analysis using panel data, by relating survey variables (proxies) to UPPAP evidence. Hence, it discusses original survey based results in light of UPPAP's evidence to identify their complementarities, and respective comparative advantages.

Let household consumption be determined by the following stochastic process:

$$Lnc_h = \beta \mathbf{X_h} + e_h \qquad \qquad \textbf{[1.1]}$$

where, Lnc_h is log consumption (per adult equivalent) of household h; $\mathbf{X_h}$ is a vector of strictly exogenous household and community characteristics, including household demographic composition, characteristics of the head, non-income indicators of the household's socio-economic status, and community infrastructure; β is a vector of parameters to be estimated and e_h is a disturbance term with mean zero.

A common alternative to modelling the (generally continuous) underlying variable, measuring the standard of living through household consumption, is to model a discrete dependent variable. To clarify, consider $p_h = \beta X_h + e_h$, where p_h equals 1 if $c_h < c^*$, and p_h equals 0 if $c_h \geq c^*$. Appleton (2002) advanced yet another approach using as the dependent variable the household poverty gap: how far, if at all, household consumption falls below the poverty line.

According to Appleton (2002), both alternatives (i.e. poverty functions) specified above are open to the criticism that it would be better to model household consumption per se since this is the behavioural variable underlying the definition of poverty. To different degrees, both approaches disregard information about the distribution of household consumption. Aside from possible measurement problems, the case for estimating poverty functions rather than consumption functions must ultimately rest on difficulties in specifying the latter.

Poverty functions may be preferable to modelling consumption if information about the level of consumption above the poverty line is not useful. This could be the case if the poor and the non-poor present different behavioural patterns. If hypothesised determinants of welfare, such as human capital and physical assets, have different returns for the poor and non-poor, then consumption functions may yield misguided policy recommendations for poverty alleviation. For example, consumption functions may show schooling to have large returns on average. However, if these results are driven by the returns accruing to non-poor households, it would be misleading to advocate expansion of education as a part of a poverty reduction package. Thus the choice between consumption functions and poverty functions in part depends on

whether people are poor just because they possess limited access to productive assets (including human capital) or whether they also receive lower returns on their assets.

On this note, using the first nationally representative household survey of Uganda (IHS 1992/93), Appleton (2002) shows that consumption functions can provide valid inference about the welfare of the poor; in other words, there is little to be gained from modelling poverty per se. As such, the consumption function passes an informal specification test for parameter constancy. More generally, this evidence is consistent with Schultz's hypothesis that in spite of lacking resources, poor households operate efficiently, as they receive the same rate of return on their assets as the non-poor.

1.4.1 ESTIMATION AND RESULTS

This discussion is based upon the estimation of the empirical counterpart to **Eq. [1.2]**, where $C_{h,1999/00}$ is observed consumption expenditure per adult equivalent, and $X_{h,1992/93}$ represents a set of strictly exogenous household and community characteristics identified in the UPPAP (2002) among the major causes of poverty. These include large families, lack of education and skills, over-reliance on subsistence agriculture, insurgency and rebel activity, and bad cultural practices, together with lack of transportation and access to social services, including credit facilities, access to markets, and market information.[3]

$$C_{h,\,1999/00} = \beta X_{h,\,1992/93} + e_h \qquad\qquad \textbf{[1.2]}$$

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[3] Annex I contains the empirical definitions and summary statistics of the variables used in this estimation of poverty. Annex I further provides an exhaustive justification for the choice of explanatory variables.

Notably, while the use of lagged explanatory variables will not necessarily eliminate household fixed effects, it will result in more efficient estimates (Glewwe and Hall, 1998). Table 1.4 reports the main results from the estimation of **Eq. [1.2]**. In accordance with UPPAP's findings, the evidence points to four key areas of policy intervention to assist poor households rise out of poverty, and non-poor ones continue improving their welfare status. These are: (i) Family planning; (ii) education; (iii) gender; and (iv) rural development.

(i) Family Planning

Large families stretch meagre household resources, while hampering the household's ability to meet basic needs. Table 1.4 suggests that additional family members significantly reduce consumption expenditure per adult equivalent. On average, an additional member of the household reduces household consumption per adult equivalent by 5-6%.

That household size is an important variable in explaining the observed variations in welfare is confirmed by Ssewanyana et al. (2004), who argue that small households are significantly better off than their larger counterparts. More specifically, they show that family size of five and above is responsible for moving a household to a welfare level that is below the national average.

Clearly, while survey based analysis provides a precise account of the impact of large families on consumption expenditure per adult equivalent, it lacks insight on the implications of reduced consumption on individual and household welfare. These questions can be readily addressed by means of participatory processes. UPPAP's

analysis of the determinants of poverty, for instance, associates reduced consumption expenditure due to large family size with lower caloric intake, poor nutritional status, weakened physical ability, and poor health. Further, it argues that poor health causes poverty because sick individuals are unable to work, treatment does not come free of charge, and other family members (especially women) who care for the sick are unable to engage in economic activities.

The health status of individuals is of great importance not only because of the direct utility health can provide but because of productivity losses and large indirect costs, caused by ill-health, which places demands on already stretched health systems and family support networks (Strauss et al., 1998). This is particularly the case in Sub-Saharan Africa, and especially in Uganda, where high prevalence levels of HIV/AIDS over the last two decades has had a debilitating effect on many families and their ability to escape poverty.

To the effect that poor health is a serious cause for concern notwithstanding sharp reductions in poverty, Deininger and Okidi (2003) show that the past decade was characterised by a significant increase in the number of days lost to illness by the average household, from 8 to 12 between 1992/93 and 1999/00. The data also indicates that during the period under review 23% of households experienced the death of a family member aged between 15 and 40.[4]

Additional analysis of the Uganda National Household Survey series shows that the health status of the household head plays a fundamental role in determining a

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[4] This result is not necessarily telling of a general worsening of the health status. It could be the case that Ugandans are becoming more sensitive to their health and may have revised their perception of good vis-à-vis ill-health.

household's poverty status (Lawson, 2003b). More specifically, households moving into poverty have a larger proportion of sick household heads, than non-sick. The reverse in true for households moving out of poverty.

On a slightly different note, UPPAP (2002) also identified large families as a primary cause of land shortages, as many families were found to have very small plots of land that were grossly inadequate to meet the household needs due to land fragmentation. In support of this claim, descriptive analysis from the Uganda National Household Survey (UNHS-I) 1999/00 reports a 10-20% reduction in acres of land (owned) per person for each additional household member. In addition, Deiniger and Okidi (2003) document a declining share of land in the asset endowment of the population between 1992/93 and 1999/00, a time in which Uganda's population growth rate peaked at 3.4% per annum. As a direct result, they suggest that policies relating to land issues, for example those that aim to increase access to land, transparency of land administration and transferability of land, will have important implications for households' wealth.

The discussion above provides support for combining qualitative and quantitative approaches to clarify the relationship between large families and poverty in Uganda. While quantitative data computes the opportunity cost of additional household members on consumption expenditure, qualitative information clarifies the link between reduced consumption expenditure and poverty. In turn, quantitative data can be used further to test the statistical validity of the hypotheses advanced by participatory respondents.

(ii) Education

Education in developing countries is often identified as a key area where public spending can lead to poverty reduction (Appleton, 2001a). In Uganda, all UPPAP communities unequivocally accepted education to be one of the principal factors determining one's well-being status. Notably, however, education was perceived to be of limited worth when not directly related to the traditional livelihoods of the community, and when children were unable to continue studying beyond primary level due to high cost and/or lack of a nearby secondary school. Moreover, the UPPAP (2002) cited lack of education and skills, reducing income generating opportunities, as a cause of poverty in 58% and 42% of all sampled rural and urban communities, respectively.

To corroborate this evidence, the Uganda National Household Survey (UNHS) 1999/00 supports the claim that high costs remain the most important barrier to school enrolment,[5] and shows that both adult female and male average years of education in poor households are significantly lower than in their wealthier counterparts. Such differences are especially pronounced in urban areas, where poor and non-poor households average a total of 8 and 19 adult years of education, respectively.

Table 1.4 highlights the importance of education as an effective means to improve the household's standard of living by increasing consumption expenditure per adult equivalent. Notably, the marginal impact of female education appears threefold that of male education. One additional year of female education raises household

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[5] Cost as a deterrent of education is a bigger concern for wealthier (and urban) households than for their poorer counterparts. Further, there appears to be a clear link between the cost of education and utilization patterns by different welfare groups in different regions.

consumption expenditure per adult equivalent by 3.6 percentage points, compared to 1.1 for males.

On a related note, modelling total earnings at household level over time, Appleton (2001c) estimates substantial increases in returns to education, in contrast to constant coefficients on the traditional factors of production. More specifically, if adults in the household average an extra year of primary education, this raises household earnings by 8% in 1999/00 compared to 5% in 1992. Averaging an extra year of secondary education raises household income by 13% in 1999/00 compared to 10% in 1992. The rise in the coefficients on university education is even larger. If all household members had attended university, income would be 183% higher, ceteris paribus, in 1999/00; in 1992, the corresponding figure is 54%.

Pointing to education as one of the main drivers of household well-being, these quantitative results fail to account for UPPAP's reservations on the value of education. Participatory evidence is indeed a primary source of concern over the quality of the delivery of education in Uganda. While on balance, and by international comparison, the returns to education in Uganda do not appear low,[6] UPPAP respondents' concerns on the value of education are corroborated by nationwide alarming shortages of qualified teachers, textbooks, classrooms, classroom equipment

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[6] For primary education, the private rate of return doubles from 15% in 1992 to 30% in 1999/00. The primary rate of return also rises substantially, almost doubling in the case of secondary school. There is little difference between the private and the social returns to secondary education, since the direct cost of such education to the government is small relative to the assumed opportunity cost. For primary education, relatively low opportunity cost can make the direct cost to the government more important. Nonetheless, the social return to primary education is estimated at 24% in 1999/00. The allowance for public direct cost is most important for university education, lowering the return in 1999/00 from a private rate of 24% down to a social rate of 13%. Overall, it appears that the social rate of return is highest for primary education, followed by university and then secondary education. It is noteworthy that the fall in public spending per university student from 1992 to 1999/00 has greatly increased the social return, from a scarcely profitable 3% to a healthy 13% (Appleton, 2001a).

(e.g. desks), and the absence of agriculture in the primary curriculum. On the latter, UPPAP's community members explained that the inclusion of agriculture would make the curriculum more practical and relevant, while equipping school leavers with the necessary modern farming skills.

The discussion above suggests that qualitative and quantitative approaches complement each other by addressing different aspects of the debate on the importance of education in Uganda's poverty reduction strategy. On the one hand, survey based evidence, highlighting high rates of return to education, stresses the importance of investments in education for poverty alleviation. UPPAP's observations, on the other hand, provide unprecedented insight on the factors compromising the success of delivering education.

(iii) Gender

The centrality in addressing gender issues in poverty reduction and development in Africa is being increasingly recognised, with growing evidence showing that the nature, causes and impacts of poverty are different for men and women (Lawson, 2003a). Gender inequality persists in access to and control of a range of productive, human, and social capital assets.

Our quantitative results show inconclusive evidence on the relationship between gender issues and poverty. Female-headed households appear worse-off than their male-headed counterparts. By contrast, widow-headed households in the northern region are visibly better off than their respective counterparts. Our results further present mixed evidence on the relationship between the proportion of female adult

members of the household and consumption expenditure per adult equivalent. To this effect, table 1.4 discloses stark regional differences in women's contribution to household welfare. Whereas in the central region the proportion of female adult members of the household increases household wellbeing via increased consumption expenditure, the reverse is true for the northern region.

These results are likely to be the consequence of varying degrees of female participation in household activities in different regions of the country. Nonetheless, they appear to be in line with Appleton's (1996) conclusions that female-headed households as a whole do not appear to be poorer when assessed by consumption and income, nor do they appear to be consistently disadvantaged on social indicators.

Notwithstanding the paper's overall findings, Appleton (1996) documents that some sub-groups, such as widowed female-headed households, have lower income, face inequalities in educational attainment, and are dependant upon high levels of remittances to maintain economic parity. Similarly, Lawson (2003c) argues that households headed by sick females, or female agricultural subsistence workers, face a higher probability of falling into poverty.

Such considerations rest at the heart of UPPAP's (2002) analysis. According to UPPAP (2002), female-headed households – especially widows with few assets and several children – are more vulnerable to falling into poverty. Widows are often not allowed to become the head of the household and are generally disregarded. In some cultures, women are not able to inherit property. Grabbing of the husband's property by in-laws, clan members or elder children often propels widows into poverty: "When

my husband was alive 5 years ago, we had 25 goats, 2 big turkeys and 1 chicken. By then I had 4 children. My husband and I worked hard, very hard indeed, to acquire the 5 acres of land that enabled us to produce some good amounts of food. We were able to pay school fees, dress our children and so on. But soon after his death, Hhmmm…, my in-laws began to grab what we had. They took them one by one until I was left with only one acre of land! They refused to even pay school fees for my children. With those hardships, I had to leave my home. I am now struggling on my own with 5 children. My relatives are so poor that they cannot help me" (Widow, Chokwe, Moyo).

UPPAP (2002) also emphasises the importance of female participation in household activities, by concluding that (i) men and women spend disproportionately large amounts of household expenditure on alcohol and school fees, respectively, and that (ii) women generally work substantially longer hours than men. In the colourful words of a UPPAP respondent: "Women are the brewers of local alcohol in communities, while men are their main customers. While women brew to support their families, men are often responsible for depleting household resources to drink". These remarks suggest a possible explanation for our finding that widow-headed households in the northern region are better off than their respective counterparts. That is, widows, who are successful in establishing themselves as the head of the household without any interference from in-laws, clan members or elder children, are in a position to use household resources more effectively.

As our consumption data from the Uganda National Household Survey series is not disaggregated at the individual level, it is not possible to verify the former claim on

individual expenditure preferences. Borrowing from Lawson's (2003a) analysis of the Uganda Demographic and Health Survey (2000), however, we find evidence that alcohol expenditure as a proportion of total expenditure peaks in divorced male-headed households – with over 6% of total expenditure spent on alcohol. This compares with less than 2% for divorced female-headed households. For expenditure on school fees, female-headed households appear to spend proportionately more than male-headed households. This result is particularly accentuated with divorced and widowed female-headed households and is even the case after controlling for the increased numbers of young people in these types of household. Finally, in terms of the number of hours worked by individual members of the household across all types of occupation, using the Uganda National Household Survey (UNHS-II) 2002 Lawson (2003a) finds that, on average, women work longer hours than their male counterparts.

This section provides a clear example of the gains associated with combining qualitative and quantitative approaches. Early analysis of Uganda's quantitative sources of data failed to fully account for the importance of gender issues in poverty reduction. By contrast, qualitative research placed gender considerations at the forefront of poverty analysis. Participatory evidence alone is not sufficient to validate and generalise national behavioural relationships as they are derived from clearly identified catchment areas with a specific geographic limitation. Nonetheless, UPPAP's (2002) contributions proved instrumental in guiding more rigorous scrutiny using statistical analysis. There is no doubt that gender inequalities in Uganda come as a result of women facing limited opportunities for social and economic development due to their role in society and their relationship with men. It is also true,

however, that these restrictions are subject to stark regional variations and revolve around women's status, ownership and access to assets, participation in decision-making, and workload.

(iv) Rural development

Both quantitative and qualitative sources of data confirm that in Uganda, agriculture, particularly crop farming, is the major livelihood engaging activity. Table 1.4 estimates that consumption expenditure per adult equivalent in agricultural households is, on average, 12% lower than in non-agricultural ones. In support of this finding, Ssewanyana et al. (2004) report that between 1992/93 and 2002/03, households whose head worked in non-crop farming, trade and transport, or communication registered consistently higher welfare levels than their counterparts in crop farming.

UPPAP's analysis complements our quantitative findings. Farmers responding to UPPAP explained that due to their heavy dependence on environmental resources, their livelihoods are highly vulnerable to sudden shocks and changes in physical conditions. As poor people command a minimal asset base, they lack alternative opportunities to make a living; hence, incomes remain variable and unstable. Any slight change in the condition of the physical resource base on account of a shock, stress or disaster worsens household well-being. For example, people reported that unpredictable weather patterns and climatic conditions, characterised by usually heavy and erratic/unreliable rains, lead to crop and infrastructure damage, causing food insecurity. Moreover, they expressed how lack of information on prices, coupled

with lack of access to alternative markets, undermines their ability to negotiate better prices with traders.

This evidence provides a clear example of the advantages of integrating qualitative and quantitative approaches to poverty analysis. In this framework, survey data quantifies the impact of the household head's main occupation on household welfare, while qualitative data explains the reasons associating certain sectors of the economy with increased poverty.

On a slightly different note, UPPAP (2002) identifies isolation, and lack of credit and market facilities among the biggest barriers to community development. Across all sampled UPPAP communities, improvement in roads was the most frequently cited priority problem. Poor respondents valued credit, but widely believed that terms and delivery mechanisms of current programmes were strategically designed to serve their wealthier counterparts. They also valued highly produce markets, but argued that limited access – including high duties, and exploitation – did not allow the poor an opportunity to obtain reasonable profits from the sale of their produce. Problems with marketing were reported by farmers in places with good infrastructure as well as in remote sites. Moreover, farmers noted that marketing difficulties provided a disincentive to production and investment in agriculture.[7]

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[7] These qualitative observations are suggestive of a widening gap of income generating opportunities between the top and bottom ends of the population. Most interestingly, they have recently been complemented by a number of quantitative studies. Ssewanyana et al. (2004) and Pender et al. (2004) independently support the hypothesis that poor households have less access to market information, extension services, and credit facilities.

In line with UPPAP (2002), table 1.4 singles out distance to a bank as an important barrier to increased consumption in both northern and eastern Uganda. In these regions consumption expenditure per adult equivalent decreases, on average, by 0.4% for each additional kilometre required to walk to a bank. A possible explanation for this finding is that borrowing constraints force liquidity constrained households to forego high(er) return activities.

Northern and Eastern Uganda have been under the constant threat of rebel insurgency and cattle-raiding for over twenty years. Local people in areas most affected by the threat of cattle-raiding and rebel insurgency agreed that they make existing poverty worse, and prohibit development (UPPAP, 2002). Rebel insurgency in these regions affects all aspects of people's lives – social, physical and emotional. Property is lost, injuries and death occur, and displacement and fear result. The consequences are isolation and limited business opportunities, community insecurity, low productivity, food insecurity and low incomes. In addition, the devastating consequences of these raids were clearly expressed by those ethnic groups who do not raid back. In their own words, "losing cattle means losing everything … Cattle are banks of cattle-keepers so loss of cattle equates to loss of wealth as well as loss of livelihood. Without cattle, bride price cannot be paid, services cannot be paid for in kind, school costs and household needs cannot be met".

Our quantitative results for these regions only minimally suggest that the unavailability of roads, transport facilities, credit services, and/or markets places severe pressure on households' ability to improve their welfare status. Further, our analysis merely recognises Easterners and Northerners' inabilities to safeguard and

diversify household resources. This argument exposes one of the main limitations of our data, and survey based analysis in general, viz. inadequate coverage of insecure areas. It follows that participatory evidence, capturing individual experiences and community dynamics, provides a valuable source of information to contextualise analytical results often lacking nuance and texture.

1.5 DISCUSSION AND CONCLUSION

This paper combines Uganda's rich sources of qualitative and quantitative data to deepen our understanding of poverty as a whole. The analysis widens the numerical notion of vulnerability in the literature by adding texture to our consumption based index of household vulnerability. In doing so, it highlights the advantages of integrating qualitative and quantitative approaches to poverty analysis by showing that the comparative advantage of participatory and survey based instruments lie in probing the "why", and "what" and "how much" questions, respectively.

On the bases that different research techniques provide complementary information, there is a potential benefit when setting the agenda for research within one approach in learning from the results of previous work using an alternative approach. As a clear example, in the Ugandan context, survey data results about poverty suggest that participatory research may be useful in understanding how poverty fell. This might require some refocusing of attention from the standard participatory concerns with people's existing or worsening problems, and onto their achievements and areas of progress. Understanding what some people have done to raise their material standard of living might be useful in learning what the government can do to assist these efforts and enable others who have not.

Section 1.3 builds on the relative contributions of qualitative and quantitative analysis to re-conceptualise chronic poverty in Uganda.[8] Our definition of chronic poverty reflects the proportion of households simultaneously poor and with a likelihood of

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[8] This discussion is based upon the notion of vulnerability developed by Chaudhuri et al. (2002), Christiansen and Subbarao (2001), and Pritchett et al. (2002). The relevance of introducing and measuring vulnerability in explaining the dynamics leading to, and perpetuating poverty in Uganda is explained in detail in Angemi (2011).

being poor in the next period greater than 0.90 [i.e. column (3)]. This group constitutes 11% and 5% of the population in 1992/92 and 1999/00, respectively. Notably, these households may represent a subset of the chronic poor. Perhaps the chronic abject-poor, in that 0.90 is an extremely high cut off point for the likelihood of a household experiencing poverty in the next time period.

This quantitative approach for identifying the chronic poor offers the opportunity to understand the extent and pattern of chronic poverty in Uganda. Clearly, however, many aspects of chronic poverty, and especially the understanding of the social processes that underline exclusion or deprivation, are only amenable to a qualitative analysis. In line with Howe and McKay (2004), this 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).

Section 1.4 models poverty in light of participatory evidence, by relating survey variables to qualitative evidence. In general terms, Uganda's qualitative and quantitative sources of data appear to be reliable in themselves, and where they relate to similar issues, are broadly consistent with each other. The two sources also complement each other, providing insights that the other cannot. This dual approach to poverty analysis enriches the discussion of poverty trends by drawing attention to aspects of poverty and well-being neglected by simple construction of poverty indicators (Carvalho and White, 1997).

In light of the foregoing discussion, there is substantial support for small movements from either side in the other direction. But there are grave concerns about large movements, ending up with an undifferentiated single instrument or approach. In this case, however, it is the responsibility of analysts to reach out and understand the other ends of the spectrum and to learn from them. This is particularly difficult because of disciplinary divides.

In conclusion, getting a little of the best of both worlds seems relatively easy. Getting more than this, it seems, may be quite a bit more difficult.

Table 1.1: Vulnerability (Vul) transition, 1992/93-1999/00

	Non Vul 1992-93 / Non Vul 1999-00	Non Vul 1992-93 / Vul 1999-00	Total Non Vul	Vul 1992-93 / Non Vul 1999-00	Vul 1992-93 / Vul 1999-00	Total Vul
Nation	517 (91.67)	47 (8.33)	564 (100)	463 (62.15)	282 (37.85)	745 (100)
Rural	395 (91.01)	39 (8.99)	434 (100)	424 (62.26)	257 (37.74)	681 (100)
Urban	122 (93.85)	8 (6.15)	130 (100)	39 (60.94)	25 (39.06)	64 (100)
Central	201 (99.01)	2 (0.99)	203 (100)	185 (92.50)	15 (7.50)	200 (100)
Eastern	102 (86.44)	16 (13.56)	118 (100)	118 (64.13)	66 (35.87)	184 (100)
Northern	25 (52.08)	23 (47.92)	48 (100)	15 (9.80)	138 (90.20)	153 (100)
Western	189 (96.92)	6 (3.08)	195 (100)	145 (69.71)	63 (30.29)	208 (100)
Central rural	147 (99.32)	1 (0.68)	148 (100)	172 (95.03)	9 (4.97)	181 (100)
Central urban	54 (98.18)	1 (1.82)	55 (100)	13 (68.42)	6 (31.58)	19 (100)
Eastern rural	77 (84.62)	14 (15.38)	91 (100)	110 (63.95)	62 (36.05)	172 (100)
Easter urban	25 (92.59)	2 (7.41)	27 (100)	8 (66.67)	4 (33.33)	12 (100)
Northern rural	14 (41.18)	20 (58.82)	34 (100)	6 (4.62)	124 (95.38)	130 (100)
Northern urban	11 (78.57)	3 (21.43)	14 (100)	9 (39.13)	14 (60.87)	23 (100)
Western rural	157 (97.52)	4 (2.48)	161 (100)	136 (68.69)	62 (31.31)	198 (100)
Western urban	32 (94.12)	2 (5.88)	34 (100)	9 (90)	1 (10)	10 (100)
Agricultural household	302 (89.88)	34 (10.12)	336 (100)	397 (62.82)	235 (37.18)	632 (100)
Non-agricultural households	215 (94.30)	13 (5.70)	228 (100)	66 (58.41)	47 (41.59)	113 (100)
High dependency ratio	260 (92.20)	22 (7.80)	282 (100)	388 (60.82)	250 (39.18)	638 (100)
Low dependency ratio	257 (91.13)	25 (8.87)	282 (100)	75 (70.09)	32 (29.91)	107 (100)
Female headed household	130 (94.89)	7 (5.11)	137 (100)	105 (61.40)	66 (38.60)	171 (100)
Male headed household	387 (90.63)	40 (9.37)	427 (100)	358 (62.37)	216 (37.63)	574 (100)

Note: Figures are absolute numbers, and percentages are presented in parentheses.

Table 1.2: Poverty and Vulnerability, 1992/93-1999/00

1992/93	Non vulnerable	Vulnerable	Total
Non poor	395 (30)	265 (20)	660 (50)
Poor	169 (13)	480 (37)	649 (50)
Total	564 (43)	745 (57)	1,309 (100)

1999/00	Non vulnerable	Vulnerable	Total
Non poor	781 (60)	136 (10)	917 (70)
Poor	199 (15)	193 (15)	392 (30)
Total	980 (75)	329 (25)	1,309 (100)

Note: Figures are absolute numbers, and percentages are presented in parentheses.

Table 1.3: Chronic poverty trends and patterns, 1992/93-1999/00

1992/93	(1) Poor & Vul (Prob>.50)	(2) Poor & Vul (Prob>.75)	(3) Poor & Vul (Prob>.90)
National	*481*	*280*	*141*
	(37)	*(21)*	*(11)*
Rural	435	248	115
	(91)	(89)	(82)
Urban	46	32	26
	(9)	(11)	(18)
Central	116	38	14
	(24)	(14)	(10)
Eastern	124	89	56
	(26)	(32)	(40)
Northern	111	92	63
	(23)	(33)	(45)
Western	130	61	8
	(27)	(21)	(5)

1999/00	(1) Poor & Vul (Prob>.50)	(2) Poor & Vul (Prob>.75)	(3) Poor & Vul (Prob>.90)
National	*134*	*92*	*61*
	(10)	*(7)*	*(5)*
Rural	118	80	52
	(88)	(87)	(85)
Urban	16	12	9
	(12)	(13)	(15)
Central	3	1	1
	(2)	(1)	(2)
Eastern	19	8	2
	(14)	(9)	(3)
Northern	102	82	57
	(76)	(89)	(93)
Western	10	1	1
	(8)	(1)	(2)

Note: Figures are absolute numbers, and percentages are presented in parentheses.

Table 1.4: OLS estimation of consumption

	Uganda	Central region	Eastern region	Northern region	Western region
Family planning					
Average household size	**-0.056***	-0.038	**-0.051**	0.054	**-0.132***
	(-4.13)	(-1.16)	**(-2.58)**	(1.08)	**(-2.78)**
(Average household size)^2	**0.002***	0.002	**0.002***	-0.005	**0.006**
	(3.67)	(0.93)	**(3.30)**	(-1.57)	**(2.03)**
Dependency ratio	-0.028	0.028	-0.033	-0.114	**-0.083**
	(-1.39)	(1.14)	(-0.78)	(-1.67)	**(-2.06)**
DV=1 if no adult members of the household	**-0.218**	0.165	**-0.367**	0.287	**-0.810***
	(-2.18)	(1.18)	**(-2.54)**	(1.44)	**(-2.67)**
Age of the household head	0.004	0.011	0.002	0.036	-0.002
	(0.75)	(0.010)	(0.27)	(1.66)	(-0.20)
(Age of the household head)^2	-9.55e-06	-0.0001	0.00001	-0.0004	0.0001
	(-0.17)	(-1.26)	(0.17)	(-1.42)	(0.84)
Education					
Female adult mean years of education	**0.036***	**0.037***	**0.035**	**0.028**	**0.041***
	(5.88)	**(3.16)**	**(2.48)**	**(2.14)**	**(4.01)**
DV=1 if missing obs. for female adult mean years of education	0.101	**0.415**	-0.073	0.185	**-0.421***
	(0.92)	**(2.33)**	(-0.35)	(0.72)	**(-1.97)**
Male adult mean years of education	**0.010**	0.005	0.004	**0.032**	0.008
	(1.99)	(0.69)	(0.34)	**(2.14)**	(0.81)
DV=1 if missing obs. for male adult mean years of education	**0.151***	-0.048	0.185	0.275	**0.486***
	(1.89)	(-0.40)	(1.08)	(1.07)	**(3.01)**

Table 1.4 (continued): OLS estimation of consumption

Gender					
DV=1 if female household head (F)	**-0.100***	-0.099	0.066	-0.141	-0.198
	(-1.77)	(-0.94)	(0.51)	(-0.92)	(-1.60)
DV=1 if widow household head (W)	0.136	0.164	-0.238	0.251	**0.352****
	(1.18)	(0.90)	(-0.85)	(1.20)	**(2.48)**
(F) * (W)	0.019	-0.056	0.181	-0.154	-0.082
	(0.15)	(-0.25)	(0.62)	(-0.69)	(-0.45)
Proportion of female adult members of the household	-0.037	**0.429***	-0.143	0.159	**-0.706****
	(-0.24)	**(1.80)**	(-0.49)	(0.42)	**(-2.05)**
Rural development					
DV=1 if agricultural household�	**-0.115****	**-0.228****	**-0.152****	-0.015	-0.012
	(-2.87)	**(-3.32)**	**(-2.02)**	(-0.13)	(-0.16)
Average distance to tarred road (Km)	-0.00003	0.001	0.001	-0.002	0.0003
	(-0.04)	(0.87)	(0.56)	(-0.97)	(0.31)
DV=1 if missing obs. for distance to tarred road	0.068	-0.162	**0.248****	0.018	**0.212****
	(0.84)	(-1.16)	**(3.02)**	(0.15)	**(2.44)**
Average distance to bus or taxi stop (Km)	-0.001	-0.001	0.0004	0.003	-0.001
	(-0.43)	(-0.46)	(0.26)	(0.93)	(-0.43)
DV=1 if missing obs. for distance to bus/taxi stop	-0.046	**-0.640****	-0.182	**0.427****	**0.301****
	(-0.24)	**(-6.70)**	(-1.11)	**(2.47)**	**(2.90)**
Average distance to bank (Km)	-0.001	0.0001	**-0.004***	**-0.004***	0.001
	(-0.99)	(0.05)	**(-1.96)**	**(-1.74)**	(0.50)

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Table 1.4 (continued): OLS estimation of consumption

DV=1 if missing obs. for distance to bank	-0.020 (-0.22)	0.373 (1.65)	-0.128 (-0.89)	-0.135 (-0.90)	-0.044 (-0.41)
DV = 1 if produce market available in the village	-0.030 (-0.42)	0.046 (0.26)	**-0.189*** **(-1.86)**	0.207 (0.98)	-0.085 (-0.63)
DV=1 if missing obs. for produce market available in the village	-0.188 (-0.88)	0.234 (1.38)	-0.102 (-0.55)	-0.463 (-1.66)	**-0.693*** **(-3.31)**
Rural household$^{\top\top}$	**-0.278*** **(-5.05)**	**-0.272*** **(-3.05)**	-0.196 (-1.59)	**-0.323** **(-2.51)**	**-0.408*** **(-3.68)**
Eastern region$^{\top\top}$	**-0.167*** **(-3.92)**				
Northern region$^{\top\top}$	**-0.551*** **(-10.05)**				
Western region$^{\top\top}$	-0.047 (-1.01)				
Constant	**9.446*** **(59.27)**	**9.183*** **(30.87)**	**9.353*** **(32.38)**	**7.884*** **(17.91)**	**9.978*** **(31.07)**
R^2	0.2611	0.2317	0.2096	0.3036	0.2285
Total number of clusters	349	128	103	62	108
Total number of observations	1309	403	302	201	403

$^{\top\top}$ Omitted category: Non-agricultural household, Urban area, and Central region.

Note: * denotes statistical significance at 10%, ** significant at 5%, *** significant at 1%. In addition, all reported standard errors are robust (White H., 1980; 1982), and adjusted to permit observations within clusters (primary sampling units) to be correlated (Deaton A., 1997).

Annex I: Variables definition and summary statistics

	1992/93		1999/00	
	Mean	S.D.	Mean	S.D.
Dependent variable				
Consumption expenditure per adult equivalent (Uganda shillings)	6,959.18	4,490.66	10,277.15	13,148.88
Household demographic composition				
Average household size	5.35	3.08	5.77	3.21
Dependency ratio	1.35	1.15	1.51	1.13
Proportion of female adult members of the household	0.29	0.19	0.29	0.21
Age of the household head	43.07	15.51	49.87	15.44
DV=1 if female household head	0.24	0.42	0.28	0.45
DV=1 if widow household head	0.11	0.31	0.20	0.40
Non-income indicators of the household's socio-economic status				
Female adult mean years of education	3.18	3.21	4.10	11.67
Male adult mean years of education	5.09	3.96	6.32	15.43
DV=1 if agricultural household	0.74	0.44	0.80	0.40
Community characteristics				
Average distance to tarred road (Km)	27.52	32.95	26.21	32.25
Average distance to bus or taxi stop (Km)	11.30	16.27	10.46	15.26
Average distance to bank (Km)	23.36	21.81	25.76	22.66
DV = 1 if produce market available in the village	0.06	0.23	0.06	0.23

N.B. All chosen household characteristics are fixed, or non-manipulable. In other words, these variables are exogenous, at least in the short-run, and for clarity of exposition have been grouped in the following three categories:

i.   *Household demographic composition*

Household size is an important determinant of poverty on the basis that the Uganda Participatory Poverty Assessment Projects (UPPAP, 2000, 2002) documents large families stretching scarce household resources. UPPAP (2000, 2002) also points to the vulnerable status of women and elderly men. As such, the age of the household head, the proportion of female members of the household, and the gender of the household head have been singled out in the empirical specification of the model. Finally, the dependency ratio features in view of the fact that the higher the number of dependants, the fewer resources per person.

ii. *Non-income indicators of the household's socio-economic status*

Education unequivocally accounts for one of the main factors determining a household's well-being status (UPPAP, 2000, 2002). Notably, our specification differentiates between adult male and female mean years of education to account for stark gender divides in educational attainment. An additional non-income indicator of the household's socio-economic status is provided by the household's main economic activity. To this effect, a dummy variable was created to reflect whether a household derives its main source of income from agriculture.

iii.   Community characteristics

A key lesson from the empirical literature is the significance of infrastructure variables on household growth opportunities (Deininger and Okidi, 2003). To assess the importance of such community characteristics, it is possible to include a number of variables capturing the distance a household needs to travel to access public roads, transport facilities, credit institutions, and local markets.

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