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Poverty estimates from the Uganda National Household Survey III, 2005/2006

Sarah N. Ssewanyana

John A. Okidi

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Abstract

Using 2002/03 and 2005/06 nationally representative household surveys, poverty headcount index declined from 38.8% to 31.1% respectively. The corresponding poverty gap ratio declined from 11.9% to 8.7%. While all Ugandans enjoyed an increase in consumption between the sample periods, the rate of growth in consumption was slightly higher for the lower percentiles. This led to a significant improvement in the distribution of income as demonstrated by the decline in the Gini coefficient from 0.428 to 0.408. The urban areas continue to have higher rates of inequality, nonetheless, they witnessed a significant improvement. The Gini coefficient declined from 0.483 in 2002/03 to 0.432 in 2005/06. Overall, the improvement in the distribution of income had a positive impact on poverty reduction. The poverty headcount in 2005/06 would have been higher by 1.2 percentage points if distribution of income had remained constant at the 2002/03 level. Using static decomposition techniques to examine the pattern of inequality between and within different subgroups it is evident that inequality in real consumption between regions and educational attainment of the household head increased over the sample periods. But inequality declined between rural/urban subgroups.

1.   Introduction

In this paper we provide an update of the estimates of poverty in Uganda using data from the Uganda National Household Survey III (UNHS-3). Our notion of poverty in this paper refers to income poverty (consumption poverty) unless stated otherwise. The UNHS-3 covered 7,426 households and was conducted by the Uganda Bureau of Statistics (UBoS). It was a nationally representative survey and covered the entire country including the Internally Displaced People's (IDP) camps. The poverty estimates from this survey are compared with the estimates based on the previous household surveys to provide insights into progress made so far in poverty reduction.

The Uganda National Household Survey of 2002/03 (UNHS-2) and the UNHS-3 have some similarities and differences that are worth noting for measuring poverty. First, both surveys share the same sampling frame based on the Population and Housing Census of 2002, but differ in terms of stratification. The UNHS-2 used district as a stratum divided into urban, other urban and rural areas; whereas UNHS-3 used region as a stratum divided into rural and urban[1]. Second, UNHS-2 visited the sampled Enumeration Areas (EAs) once, whereas UNHS-3 visited EAs twice. Third, both surveys were conducted during the same months[2]. Fourth, the two surveys shared very similar consumption sections, with almost the same list of item codes and identical recall periods. Nevertheless, the 2005/06 survey includes a few items not listed separately in the survey

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[1] . Urban in the 2005/06 survey is defined as referring to the Population Census designated towns rather than to growth centres.

[2] . The timing of UNHS-3 coincided with the National elections but we cannot determine the extent to which this might have affected the income poverty estimates presented in this paper. Also, nearly 9% of the households were covered in September 2006 whereas 0% was covered during the same period in 2002. And September is a high spending period in terms of school fees and it is also harvesting period. In addition, a closer examination shows that 17% of the 2006 sampled households were surveyed between January-February whereas only 8.5% of the UNHS-2 sample were covered in the corresponding period in 2003. However, no attempts are made to investigate the distortions it might bring in the poverty estimates.

of 2002/03[3]. In addition, UNHS-3 captured health and education expenditures at both individual and household levels unlike UNHS-2, which captured the information only at household level[4]. Fifth, the UNHS-3 covered 7,426 households whereas UNHS-2 covered 9,711 households. But both surveys are nationally representative despite differences in the number of sampled households.

More notable is the feature that the two surveys maintained the same reference period for each expenditure group. Different recall periods were used to capture information on different sub-components of household expenditures. While a 7-day recall period was used for expenditure on food, beverages and tobacco, a 30-day recall period was used in the case of household consumption expenditure on non-durable goods and frequently purchased services. For the semi-durable and durable goods and services, and non-consumption expenditures a 365-day recall period was used.

In both surveys, all purchases by household members and items received free as gifts were valued and recorded as per the current prices. The items consumed out of home produce were valued at the current farm-gate/producer prices while rent for owner occupied houses was also imputed at current market prices. Food consumption includes food consumed from own production, purchases and free collection/gifts.

Expenditure data were collected on item-by-item basis. The expenditures were aggregated according to the recall period used and by broader sub-components of expenditures to the household level. Given the different recall periods used to collect data on household expenditures, some conversion factors were applied to change the data on a 30-day monthly basis[5]. All the different sub-components of the expenditures were then aggregated to derive the total expenditures at household level. Further adjustments were made in the construction of the consumption aggregate[6] included accounting for intertemporal[7] and spatial price variations[8], revaluation of foods derived from own consumption into market prices and finally accounting for household composition in terms of sex and age and their corresponding minimum caloric requirements.

For consistency and comparability over time, the poverty estimates reported in Appleton (2001) and Appleton & Ssewanyana (2003) adjust for geographical coverage of the entire country. They excluded the Acholi sub-region and districts of Bundibugyo and Kasese, as

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[3] . The reader should be aware that household surveys in Uganda are constantly evolving, a fact that, although welcome, might introduce problem of comparability over time. For instance, new areas of consumption have cropped up. To narrow the discussion to UNHS-2 and UNHS-3, some of these items were areas of new consumption such as generators/lawn mowers fuel, expenses on phones not owned; and others as a result of breaking down the items into their different forms such as combination of own mobile and fixed phone expenses, imputed rent separated between owned house and free house. Also to be noted is the introduction on new codes not originally reflected in the questionnaire. While health and education expenditures were captured both at individual and household levels in 2005/06, in 2002/03 such information was captured at household level only.

[4] . This approach does, to some extent, reduce on the measurement errors in reporting health and education expenses.

[5] . There were 5 households dropped from UNHS-3 due to missing expenses on food, beverages and tobacco. This led to a reduction in the number of households used in analysis from 7,426 to 7,421. On the other hand, a hedonic regression was employed to impute rent for 76 households who had rent information missing.

[6] . Household consumption expenditure is preferred over income in assessing poverty incidence as the former can be more accurately reported by the households/individuals than the latter.

[7] . We use the national composite Consumer Price Index (CPI) published monthly by the Uganda Bureau of Statistics.

[8] . We use the food index as derived from information provided in the respective household survey. This is meant to account for differences in food prices across region (rural/urban divide).

these areas were not covered in the household survey of 1999/00 (UNHS-1). This practice to some extent leads to a downward bias in poverty estimates since the excluded districts are among the poorest in the Country. To have a complete picture of the level of poverty in Uganda, we focus our analysis on the household surveys of 1992/93, 2002/03[9] and 2005/06. However, we also report poverty estimates based on the 2005/06 survey excluding those districts not covered in UNHS-1. The detailed discussions that follow provide a full picture of poverty in Uganda unless stated otherwise. Throughout the paper, we report expenditure at the mean and on a 30-day monthly basis unless stated otherwise. All estimates are weighted to give a national picture.

In addition to our contribution to the official UBoS Socio-economic Survey report for 2005/06, in this paper we endeavour to provide some preliminary explanations of the observed poverty reduction in Uganda over a period of 3 years. This is done by exploring further evidence in the data and where possible reference is made to the existing administrative data.

The rest of the paper is organized as follows. In the next section, we discuss the changes in consumption expenditures. Section 3 presents poverty patterns and trends. The inequality of consumption expenditure is presented in section 4. The pattern of growth across the income distribution is also examined in this section. Possible explanations for the observed patterns and trends in poverty and distribution of income are presented in section 5. Section 6 presents concluding remarks with a brief discussion of policy implications.

2.   Changes in mean consumption expenditure

In what follows, to the extent that is possible, we present a detailed comparison of UNHS-2 and UNHS-3; to show changes over time. Table 1 reveals that the mean consumption per capita in UNHS-3 is Shs. 39,829 per person per month compared to Shs. 29,900 in UNHS-2. There is thus a 33.2 percent nominal increase in consumption per capita between the surveys. This implies a real rise in consumption, since the CPI rose by 24.3 percent during the period[10]. Per capita consumption expenditure rose by 9.6 percent, in real terms. The nominal increase at the national level is driven by the strong increase in rural areas of 38.8 percent.

Although simply comparing nominal estimates of consumption with the CPI is useful to obtain a ball-park figure for real consumption, two further adjustments are made for price effects as discussed above. Specifically, home consumption on food is re-valued into market prices and regional differences in food prices are adjusted (Table 1). In the case of the comparison of 2002/03 and 2005/06 survey results, both adjustments have the effect of lowering the estimated rate of real growth. After making these adjustments as well as those for inflation, real mean consumption per capita estimated from 2005/06 survey is 11.4 percent higher than the corresponding figure estimated from 2002/03 survey. This rise implies an annualized growth rate of 3.6 percent. This growth rate, however, is lower

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[9] . The survey of 2002/03 excluded Pader district and some few EAs in Kitgum and Gulu districts. This represents less than 1% of Uganda's population according to the estimates by UBoS. Hence the survey is deemed to represent full country coverage.

[10]. The survey of 2005/06 covered the period from May 2005 to April 2006, during which time the composite CPI averaged 137.1 (1997/98=100). The survey of 2002/03 covered the period May 2002 to April 2003, during which time the CPI averaged 112.9.

than that observed between 1997 and 1999/00 of 5 percent (see Appleton, 2001). The rural areas, where the bulk of the population resides, reported stronger consumption growth of 4.8 percent, while the urban areas registered a decline of 1.3 percent annualized growth rate.

Broadly speaking, we continue to observe changes in consumption patterns over time. Private spending on human capital development (in health and education) and communication increased. The share of household consumption expenditure on education increased from 5 percent to 6.3 percent and on health from 4.1 percent to 6.3 percent in 2002/03 and 2005/06 respectively. In part, the shift from public to private service providers explains this increase. The quality of services is generally better than that offered in public facilities. There was notable increased spending on communication, especially for the poorest quintile.

3. Poverty patterns and trends

The consumption expenditure per adult equivalent is compared with the official absolute poverty line as defined by Appleton (2001) to determine an individual's poverty status. Table 3, Table 4(a) and Table 4(b) respectively report poverty statistics for the 2005/06 survey, 2002/03 survey and the earlier estimates for the IHS survey of 1992/93. Data are disaggregated by location, residence and region. Along with the poverty statistics, we report the percentage of people in each location, their mean household consumption per adult equivalent and the contribution each location makes to each poverty statistic (that is, what percentage of national poverty is attributable to each location). In addition, we test whether the changes in poverty statistics are statistically significant (Table 5). Further tests on the robustness of the poverty trends are presented in Table A1 and Table A2.

Using the full sample of 2005/06, we estimate that 31.1 percent of Ugandans are poor, corresponding to nearly 8.4 million persons. Table 3 provides more detailed statistics, disaggregated by region and urban-rural status. However, excluding districts not covered in the survey of 1999/00, the headcount stands at 28.9 percent. Exclusion of these districts results in significantly lower poverty headcount index. This is also true for the other poverty measures (Table A 2). Nevertheless, poverty remains a rural phenomenon and incidence of poverty remains highest in Northern region at 60.7 percent.

To evaluate poverty trends, we can compare the results of the UNHS-3 with those of UNHS-2 and estimates from IHS. The comparisons are for the entire country. As previously mentioned, the UNHS-1 survey data point is omitted from this trend comparison as the survey did not cover the districts of Kitgum (plus Pader), Gulu, Bundibugyo and Kasese due to insurgency at the time of the survey. However, poverty estimates based on 2005/06 excluding these districts are presented in Table A 1.

The results in Table 3 & Table 4(a) reveal that the percentage of the people living in absolute poverty declined by 7.8 percentage points, corresponding to a reduction of 1.4 million persons in absolute terms. This decline is statistically significant. The other poverty indicators (poverty gap and severity of poverty estimates) follow a similar trend as the headcount index and the changes are statistically significant (Table 5). Regardless

of the poverty indicator used, it is evident that the incidence of income poverty declined significantly between UNHS-2 and UNHS-3 for Uganda as a whole.

At national level, poverty remained the same in urban areas. However, a significant decline is observed in rural areas between UNHS-2 and UNHS-3. The drastic decline in rural areas seems to be due to the strong growth in mean consumption. The percentage of rural people in poverty declined from 42.7 percent to 34.2 percent, corresponding to a decline from 9.3 million to 7.9 million persons. In urban areas, the corresponding decline was from 14.4 percent to 13.7 percent, recording a slight increase in the absolute numbers of the poor from 0.5 million to 0.6 million. Other income poverty estimates (poverty gap and severity of poverty estimates) mirror a similar trend as observed in the headcount index. For example, the poverty gap – which is related to the cost of eliminating poverty using transfers – decreased faster in rural areas by nearly 25 percent (from 13.1 to 9.7 percent) compared to the 10 percent in urban areas (from 3.9 to 3.5 percent).

The decrease in poverty between the surveys is most marked in the Western region – where the headcount declined from 32.9 percent to 20.5 percent (that is, from 2.1 million to 1.4 million persons in poverty, respectively). In relative terms, this suggests a 12.4 percentage point drop in the poverty headcount, well above the national average of 7.8 percentage points. This reduction is driven by a strong downward trend in the rural areas from 34.3 percent to 21.4 percent. The proportion of people in poverty in Eastern region declines from 46 percent to 35.9 percent (that is, from 3.2 million to 2.5 million persons in poverty, respectively). The decline is driven by the rural areas, which experienced a 10.8 percentage point drop. In Central region, the decline in the headcount indicator from 22.3 percent to 16.4 percent is statistically significant at conventional levels. Only the northern region experiences no change in headcount poverty, with a slight and insignificant fall from 63 percent to 60.7 percent. In absolute terms, the number of persons living in poverty increases from 2.9 million in 2002/03 to 3.3 million in 2005/06. While the regional rankings of poverty gap and severity of poverty estimates are identical to the headcount index, there are some differences in magnitude. A case in point is the proportionately growing difference in the poverty gap index between Northern region and other regions (especially Eastern and Western regions).

Nevertheless, the Northern region experienced a significant drop in the poverty gap (of about 12 percent). In other words, the mean consumption increased although the increase was not substantial enough to move any significant fraction of the population above the poverty line. The improvement in the region's poverty gap can be explained partly by the various humanitarian interventions and other government interventions such as the Northern Uganda Social Action Fund (NUSAF) and the return to relative peace in the region. Strong growth in consumption in other regions explains the declines in the poverty gap. One noticeable point is how much the poverty gap has reduced vis-à-vis the headcount index over the three-year period. Regardless of geographical location, we find that the percentage drop in poverty gap is higher than that of the headcount index, indicative of rising mean consumption of Uganda's poor.

Turning to poverty levels among the IDP population, some observations do emerge. Income poverty levels are significantly higher among the IDP population relative to the non-IDP population (Table 3). Poverty headcount index among the IDP population is

nearly three-fold that of the non-IDP population. The proportions are even higher for the other poverty measures. As expected the standard of living is worse among the IDP population relative to their counterparts in conflict areas. Next, we compare the IDP poverty estimates in 2005/06 with those of the first ever comprehensive Northern Uganda Survey (NUS) of 2004. Based on NUS data, the poverty estimates were 77 percent, 29.2 percent and 13.9 percent for poverty headcount, poverty gap and severity of poverty, respectively (Ssewanyana *et al.* 2006). These figures are not statistically different from those reported in Table 3 for 2005/06. Indeed, the living standards of the IDP population did not change between NUS and UNHS-3 survey periods.

Between UNHS-2 and UNHS-3, poverty headcount in Uganda fell by nearly 8 percentage points. There is need to investigate the robustness of this drastic drop over a three year period. This is done by drawing on the theory of stochastic dominance. Each point on a stochastic dominance curve gives the proportion of the population consuming less than the amount given on the horizontal line. Figure 1 shows that for every possible choice of poverty line, the poverty rate in 2005/06 is below that of 2002/03. Hence, there is first order stochastic dominance. The precise choice of the poverty line is unimportant because no matter what poverty line is chosen, we still conclude that poverty fell between the two survey periods. Similar conclusions are reached for both rural and urban areas (Figure 2 and Figure 3, respectively).

4.   Inequality patterns and trends

In this section, we present some insights into the changes in distribution of welfare since 1992/93 using consumption expenditure. For Uganda as a whole, the mean of this welfare measure increased from Shs 35,736 per month per adult equivalent in 2002/03 survey to Shs 39,746 per month in 2005/06 survey; equivalent to an annualized growth rate of 3.6 percent. Table 6 reports real consumption per adult equivalent at the median and other deciles. At the median, our welfare measure increased from Shs. 24,737 to Shs. 28,532, corresponding to an annualized growth rate of 4.8 percent. In other words, welfare increased both at the mean and median, although the increase was stronger at the median than at the mean. Notably, all deciles experienced strong positive consumption growth between the surveys. The only exception is the more affluent (the 9th decile, the lower bound of the top 10 percent, most affluent Ugandans) in urban areas. In contrast, the growth in consumption benefited only the wealthier 20 percent regardless of geographical location between UNHS II & UNHS I (see Appleton & Ssewanyana, 2003). Broadly speaking, growth was stronger over a shorter period 2003-2006 than the entire period 1992-2006 (Table 8). The period 2003-06 was marked by stronger growth in rural areas than the national average. Thus it appears that growth between 2002/03 and 2005/06 surveys benefited the masses. The rate of pro-poor growth was positive but lower than the growth in mean consumption.

An analysis of the distributional pattern of change in consumption using growth incidence curve shows an increase in consumption levels throughout the distribution during 1992-2006, depicted by the entire curve lying in the first quadrant (Figure 4). Indeed, the growth rates in consumption were faster in higher percentile groups (reflected in the upward sloping curve) and so inequality increased. However, there was a decline in growth in consumption for the top 10 percent for the period 2002-2006 (Figure 5). And

this contributed to the reduction in inequality. Table 7 reports the Gini coefficients as a measure of inequality in real consumption per adult equivalent. The statistical significant of the changes in inequality is tested using bootstrapped standard errors. These results combined with the preceding changes in growth rates as demonstrated by the growth incidence curves to enable us to examine how broad-based the growth in consumption has been between survey periods.

Between 2002/03 survey and 2005/06 survey, the Gini coefficient drops, and hence inequality declines. The improvement in the distribution of income is statistically significant. This reflects the fact that the lower deciles saw higher rises in living standards than the more affluent. But the observed decrease was driven by a significant decline in inequality of income in urban areas. The distribution of income remained unchanged in the rural areas. Nonetheless, consumption in rural areas remains far more equal across households than in urban areas. At regional level, ity was lowest in the north, with an estimated Gini coefficient of 0.331. Inequality was much higher in Central region where the estimated Gini coefficient was 0.417. This result is not surprising given that Kampala city is lumped together with Central region. The improvement in distribution of income in Central region for this period is significant, driven in part by the improvement in urban areas, which is also significant.

Since the distribution of income became less unequal between the 2002/03 and 2005/06 surveys, and growth in consumption was positive and strong, it is not surprising that poverty declined during the period. Table 8 (last two columns) presents the decomposition of poverty changes into growth and redistribution following Datt and Ravallion (1992). Evidently poverty reduction in Uganda continues to be driven by growth in consumption but also by deterioration/improvements in distribution of income. In the 2003-06 period, at national level total poverty headcount declined by 7.8 percentage points, with 84 percent of the decline attributed to growth in consumption and the rest due to improvement in redistribution. The growth in mean consumption should have reduced the percentage of people living in poverty by 6.6 percentage points (i.e. assuming the distribution of consumption remained as in 2002/03). However, changes in the distribution of welfare were progressive, implying a 1.2 percentage point drop in poverty. Indeed, growth and inequality effects were poverty reducing. However, mixed results are observed for rural and urban areas. In urban areas, the improvement of distribution of income from a Gini coefficient of 0.48 to 0.43 partly explains the observed decline in poverty. Notwithstanding the dampening effects of rising inequality of income in rural areas, the growth component was very strong such that it resulted into poverty reduction.

Table 9 presents the decomposition of income inequality into between- and within-group components for a set of household and community characteristics. The consumption inequality explained by differences between living in rural and urban areas declined by 5.1 percentage points between 2002/03 and 2005/06. By contrast, the amount of inequality accounted for by differences in mean consumption between individuals living in different regions rose from 17 to 19.6 percent. There is rising income inequality between regions but between rural-urban and between educational attainment levels, inequality has fallen. Another noticeable observation is the rising income inequality within regional sub-groupings.

5.   Discussion of the recent welfare trends

Whether households are poor in monetary terms depends on their incomes. Hence, to understand poverty, we have to look at what has been happening to people's incomes. Table 10 and Table 11 provide a disaggregation of poverty indicators for the 2005/06 and 2002/03 surveys respectively, based on the main industry in which the household head works[11]. Despite the declining importance of agricultural sector in terms of contribution to the Gross Domestic Product (GDP), 38.7 percent in 2002/03 to 31.9 percent in 2005/06, the results so far reveal increasing importance of the sector in terms of employment. Poverty declines markedly amongst crop farming households, with the headcount declining from 48.9 percent to 36.8 percent. But the weighted proportion of the sample in crop farming households increased from 45.2 percent to 53.1 percent based on the short reference period. In other words, more household heads reported their main activity as being crop farming, reflecting movement of labour into farming. This finding contrasts the poverty trends between 1999/00 and 2002/03, where movement out of crop agriculture sub-sector was observed. Nevertheless, the concentration of poor persons in Uganda remains in crop agriculture. The results further reveal that the percentage of Ugandans living on incomes below the minimum required to meet the basic needs drops in all the other sectors too.

An alternative disaggregation of the poverty estimates is by employment status of the household head (Table 12). This reveals improvements in the living standard of all categories, except for those whose head is involved in other unspecified activities. The change in mean consumption was stronger for those in private employment compared to their counterparts in government employment; and some positive change in self employment is observed. Worth noting is the increased share of private employment (from 9.9 percent in 2002/03 to 11.9 percent in 2005/06) accompanied by a reduction in the poverty headcount. This is contrary to what we observed between UNHS-1 and UNHS-2, where both population share and headcount index rose.

Both UNHS-2 and UNHS-2 captured information on what the households themselves considered as the most important source of income during the past 12 months prior to interview. The results by poverty status are presented in Table 13. The switch in labour allocation in this table matches the change in what is reported to be the most important source of income for the household. In 2002/03, nearly 42 percent of Ugandans lived in households who reported agriculture to be the most important income source compared to nearly 52 percent in 2005/06. However, this increase did not translate into worsening living standards. Instead, the incidence of poverty in the sector declined from 48.2 percent to 31.5 percent. The share of Ugandans reporting cash remittances as the most important source of income increased from 4.4 percent in 2002 to 4.8 percent in 2005/06 and at the same time they registered a reduction in the headcount index.

In the presence of remittances (either in cash or in-kind) a loss of employment or source of income will not immediately translate into low income. The survey data of 2005/06 reveal that nearly 42 percent of all the households received remittances in the previous 12

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[11]. Unlike in the previous household surveys, no information was collected on the main usual activity status during the past 12 months prior to the interview. Instead, such information was gathered for the last 7 days prior to the interview.

months. The corresponding percentages on a regional level were 59.1 in Northern, 44.4 in Central, 41.5 in Eastern and 26.9 in Western region. But the majority of households reported spending their remittances on consumption of goods and services (63.2 percent) and only 13 percent spent remittance income on education. On the other hand, access to credit seems to have improved. Overall, households with access to remittances and access to credit were less likely to be poor.

What might explain the significant poverty reduction among the crop farming households? The remarkable reduction in poverty headcount during the 1990's was attributed partly to the coffee boom in the mid-1990s (see for example, Deininger & Okidi, 2003; Appleton, 2001b). Deininger & Okidi (2003) simulated the effects of coffee price changes on poverty and found that a 10 percent increase in the price of coffee, the main tradable, would result in a reduction of the poverty headcount by 6 percentage points. This illustrates a high elasticity of poverty with respect to coffee prices. For the period of the UNHS-2 survey, coffee export prices were on average $0.56 per kg but the price stood at $1.35 per kg over the UNHS-3 survey period (Figure 6). However, coffee volumes did not increase proportionately to price increases due to coffee wilt disease (Bank of Uganda, 2006). Unlike the 2002/03 survey, the 2005/06 survey had agriculture as one of the modules. In other words, the 2005/06 survey data allows for the identification of coffee growing households. The results reveal that the incidence of poverty was much lower among coffee farming households (23.9 percent) than non-coffee growing households (34.1 percent). Consistent with previous research, the results confirm the important role of the coffee sub-sector. However, these micro findings do not seem to corroborate well with the macro performance of the coffee sub-sector. How about changes overtime? As discussed earlier, the 2002/03 did not capture information on agriculture. Instead, we crudely classify the districts into coffee and non-coffee growing districts. The incidence of poverty is lower for households in coffee producing districts. But the reduction was higher for those households in non-coffee producing districts from 44 percent to 36.4 percent whereas for coffee producing districts the headcount declined from 30.8 percent to 24.3 percent. Thus increases in coffee prices might not be the only factor underlying the reduction in poverty levels.

Other aspects of poverty trends

Civil strife: The return of relative peace in the Northern region and some parts of Eastern region partly explain the observed poverty reduction. At the time the 2002/03 survey was conducted there was insurgency in some parts of Eastern region and some households were actually residing in camps. By extension, the analysis based on the NUS of 2004 revealed that some households were not able to cultivate during the first season of 2004 due to insecurity. However, the situation had improved by the 2005/06 survey. Return of relative peace in these parts of the country is also demonstrated by the ability of the Uganda Bureau of Statistics to have been able to administer the survey among IDP population.

Sale of assets: Could the persistent sale of assets partly explain the observed poverty trends? Due to pressing needs some households are at times forced to sale their assets. It is in very few circumstances that they sell to invest in more productive activities. The survey reveals that 6 percent of the households sold assets in the past 12 months; with the

Central region in the lead at 7 percent. The incidence of poverty for those households reporting such a sale was 9 percentage points lower than their counterparts who never reported such a sale. But the survey data do not provide us with detailed information to investigate the long-run effects of such sales on the household's welfare.

Increased share of private social spending: The share of social spending on education and health in total household consumption expenditure increased by 1.3 and 2.2 percentage points, respectively, over a period of three years (see Section 2). This raises the question of whether the increased spending might have contributed to a downward bias in the poverty estimates. The results in Table 14, however, reveal that with or without social spending on education and health, poverty declined.

Lastly, the 2005/06 survey coincided with the Presidential and Parliamentary elections period. While there are anecdotal observations/comments that households/individuals received handouts and cash from politicians, we could not establish empirically the validity of these statements based on the 2005/06 data.

6.   Concluding remarks

There is no doubt that Uganda has so far recorded remarkable poverty reduction since 1992. At the same time, however, there have been reversals in the poverty trends. Put differently, efforts at sustaining income poverty reduction in Uganda have suffered some intermittent setbacks. By implication, this poses a challenge in sustaining progress towards the attainment of the MDG and PEAP[12] targets.

In the period 1992-99, poverty continuously declined. However, the period 1999-2003 was marked with an increasing trend in poverty estimates, which trend was again reversed during the period 2003-2006. Poverty reduction in Uganda is driven mainly by growth in consumption. Going by Ravallion and Chen (2003), the pattern of growth in this period has been pro-poor.

The pattern of growth between 2002/03 and 2005/06 seems to have benefited the poor to a considerable extent, nationally. As a result, proportion of people living in poverty has declined and so has, in absolute terms, the number of poor persons. Thus, significant achievements were realized in the fight against poverty in proportionate and absolute terms within a period of 3 years. Even with the application of different methods, it is evident that there was a significant reduction in poverty levels over this period. This is in contrast with the 1999-2003 period. The reduction in poverty is particularly marked for some sub-groups of the population – including rural areas as a whole and those residing in Eastern and Western regions. The recovery of coffee prices from $0.56 per kg to $1.35 per kg in 2002/03 and 2005/06 respectively partly explain the strong growth in consumption expenditure in rural areas.

Of major policy concern is the increasing number of poor persons in urban areas. The number increased from 0.5 to 0.6 million poor persons. Over the same period, the poverty headcount index changed little in the Northern region. However, the slight drop was not

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[12] The PEAP (Poverty Eradication Action Plan) is the country's comprehensive framework for economic growth and poverty reduction.

enough to prevent a rise in the number of persons living in poverty in the region. One noticeable improvement, however, was a significant drop in the poverty gap and severity of poverty indices between UNHS-2 and UNHS-3.

All percentiles of the population experienced consumption growth in real terms at a rate of more than 3 percent annually during the 2002-2006 period. Notably, the rate of growth in consumption has been slightly higher for the lower percentiles, leading to an improvement in the distribution of income during the period. While rural areas experienced very strong growth in mean consumption, the urban areas experienced marked improvement in the distribution of income. Overall, the findings suggest improvements in living standards and improvements in the distribution of income, although marked with uneven progress.

In closing, we highlight a few emerging issues. First, the issue of urban poverty needs to receive mainstream policy attention. While the government has put in place policies focusing on poverty reduction, most of the policies have a rural focus. Second, the results do reveal that poverty levels are lower among those households that reported asset sale relative to those that never did. Since we are using cross-section data we are unable to investigate the long-term effects of this apparent source of poverty reduction. Indeed, there is need for panel data to be able to investigate these dynamics and their impact on overall well-being.

Tables

Table 1: Adjusted   Comparison of Mean Consumption Per Capita

	2002/03			2005/06		
	Rural	Urban	All	Rural	Urban	All
As calculated in official reports	23,475	70,173	29,900	32,574	79,824	39,829
Revaluing home consumed food at market prices	24,643	70,606	30,968	34,615	80,685	41,689
Adjusting for regional prices	25,020	68,743	31,036	35,291	78,583	41,939
Adjusting for inflation (1997/98 prices)	22,304	61,332	27,674	25,915	57,861	30,821

Notes: Per capita consumption expenditures are computed in the "macro" way as estimated aggregate expenditure divided by estimated population

Table 2: National Accounts Estimates of Real Private Consumption Per Capita

Fiscal year	Calendar year	Private consumption (m Sh 1997/98 prices)	Population ('000s)	Private consumption per capita ('000 Sh)	Annualised growth rate (%)
2001/02		7,867,125	23,689	332.1	4.7
	2002	8,072,348	24,069	335.4	2.8
2002/03		8,118,998	24,460	331.9	0.0
	2003	8,297,243	24,851	333.9	-0.4
2003/04		8,365,964	25,255	331.3	-0.2
	2004	8,640,974	25,660	336.8	0.9
2004/05		8,959,440	26,077	343.6	3.7
	2005	9,215,502	26,495	347.8	3.2
2005/06		9,405,564	26,926	349.3	1.7

Source: i) Private consumption and Population figures from Statistical Abstract, 2006
ii) Private consumption per capita and annualized growth rates, Authors' calculations
Notes: i) Population estimates were revised after the Population and Housing Census, 2002
ii) National Accounts were revised in 2003.

Table 3: Poverty statistics in the UNHS-3, 2005/06

	Pop. share	Mean CPAE	Poverty estimates			Contribution to:		
			P0	P1	P2	P0	P1	P2
National	100.0	39,746	31.1	8.7	3.5	100.0	100.0	100.0
Rural	84.6	33,900	34.2	9.7	3.9	93.2	93.8	94.1
Urban	15.4	71,800	13.7	3.5	1.4	6.8	6.2	5.9
Central	29.2	57,600	16.4	3.6	1.3	15.4	12.1	10.7
East	25.2	32,300	35.9	9.1	3.4	29.0	26.1	24.6
North	19.7	22,600	60.7	20.7	9.2	38.5	46.8	51.3
West	25.9	39,900	20.5	5.1	1.8	17.0	15.1	13.4
Central rural	20.6	45,300	20.9	4.7	1.6	13.9	11.0	9.6
Central urban	8.6	87,200	5.5	1.1	0.5	1.5	1.1	1.1
Eastern rural	23.2	30,000	37.5	9.5	3.6	28.0	25.1	23.8
Eastern urban	2.0	59,300	16.9	4.4	1.5	1.1	1.0	0.9
Northern rural	16.9	20,500	64.2	22.3	9.9	34.9	43.1	47.7
Northern urban	2.8	35,100	39.7	11.5	4.5	3.6	3.7	3.6
Western rural	23.9	37,400	21.4	5.4	1.9	16.5	14.6	13.1
Western urban	2.0	69,900	9.3	2.0	0.6	0.6	0.4	0.3
Non-IDP	94.5	41,100	28.4	7.6	2.9	86.3	81.7	78.9
In IDP	5.5	16,600	77.9	29.2	13.6	13.7	18.3	21.1

Table 4: (a) Poverty in the UNHS-2, 2002/03

	Pop.	Mean	Poverty estimates			Contribution to:		
	Share	CPAE	P0	P1	P2	P0	P1	P2
National	100.0	35,736	38.8	11.9	5.1	100.0	100.0	100.0
Rural	86.2	29,500	42.7	13.1	5.7	94.9	95.5	95.7
Urban	13.8	74,800	14.4	3.9	1.6	5.1	4.5	4.3
Central	29.6	52,700	22.3	5.5	1.9	17.0	13.7	11.3
East	27.4	28,500	46.0	14.1	6.0	32.5	32.6	32.0
North	18.2	21,600	63.0	23.4	11.5	29.6	36.0	40.9
West	24.7	33,800	32.9	8.5	3.3	21.0	17.7	15.8
Central rural	21.6	38,400	27.6	6.9	2.5	15.4	12.6	10.5
Central urban	8.0	91,200	7.8	1.6	0.5	1.6	1.1	0.7
Eastern rural	25.3	26,200	48.3	14.9	6.3	31.5	31.7	31.1
Eastern urban	2.1	55,100	17.9	4.8	2.1	1.0	0.9	0.9
Northern rural	16.8	20,200	65.0	24.3	11.9	28.1	34.3	39.1
Northern urban	1.4	37,600	38.9	13.9	6.6	1.5	1.7	1.9
Western rural	22.6	31,500	34.3	8.9	3.4	19.9	16.9	15.0
Western urban	2.2	58,000	18.6	4.8	1.9	1.0	0.9	0.8

Notes: The poverty statistics differ slightly from those reported in official documents. These figures refer to the entire country including districts not covered in UNHS-I.

Table 4: (b) Poverty in the IHS, 1992/93

	Pop.	Mean	Poverty estimates			Contribution to:		
	Share	CPAE	P0	P1	P2	P0	P1	P2
National	100.0	23,924	56.4	20.9	10.3	100.0	100.0	100.0
Rural	87.6	21,200	60.3	22.6	11.2	93.7	94.8	95.5
Urban	12.4	43,200	28.8	8.7	3.7	6.3	5.2	4.5
Central	28.7	31,200	45.6	15.3	7.0	23.2	21.0	19.6
East	26.1	21,500	58.8	22.0	10.9	27.2	27.5	27.5
North	20.0	18,200	73.5	30.3	15.8	26.1	29.0	30.8
West	25.2	22,700	52.7	18.7	9.0	23.5	22.5	22.0
Central rural	21.2	24,100	54.3	18.7	8.8	20.4	18.9	18.1
Central urban	7.5	51,200	20.8	5.7	2.2	2.7	2.0	1.6
Eastern rural	23.8	20,600	60.6	23.0	11.4	25.5	26.1	26.3
Eastern urban	2.4	30,400	40.4	12.6	5.5	1.7	1.4	1.3
Northern rural	18.8	17,600	75.0	31.0	16.2	25.0	27.9	29.7
Northern urban	1.2	26,900	50.2	19.3	9.8	1.1	1.1	1.2
Western rural	23.8	21,900	53.8	19.2	9.3	22.7	21.9	21.5
Western urban	1.4	36,300	33.2	9.1	3.8	0.8	0.6	0.5

Notes: The poverty statistics differ slightly from those reported in official documents. These figures refer to the entire country including districts not covered in UNHS-I.

Table 5: T-test Statistics for Hypothesis of Equality of Poverty Statistics in 2002/03 and 2005/06

	P0	P1	P2
National	-7.65	-8.12	-7.43
Rural	-7.50	-7.90	-7.20
Urban	-0.43	-0.78	-0.96
Central	-3.55	-4.10	-3.09
Eastern	-5.06	-6.60	-5.95
Northern	-1.05	-2.47	-3.30
Western	-6.74	-5.59	-4.70
Central rural	-3.16	-3.81	-3.11
Central urban	-1.21	-1.07	-0.07
Eastern rural	-5.07	-6.60	-5.88
Eastern urban	-0.32	-0.47	-1.08
Northern rural	-0.37	-1.67	-2.55
Northern urban	0.16	-1.27	-1.76
Western rural	-6.45	-5.31	-4.43
Western urban	-3.78	-4.21	-4.12

Table 6: Consumption Per Adult Equivalent at Each Decile (1997/98=100)

Decile	IHS	UNHS-2	UNHS-3
National			
1	8,518	11,696	13,116
2	11,168	15,024	17,029
3	13,691	18,143	20,471
4	16,220	21,303	24,297
5	18,996	24,737	28,532
6	22,106	29,037	33,611
7	26,374	34,448	40,795
8	32,009	44,059	52,285
9	42,780	64,322	73,878
Rural			
Decile	IHS	UNHS-2	UNHS-3
1	8,194	11,160	12,597
2	10,674	14,311	16,243
3	13,001	17,163	19,503
4	15,319	19,970	22,787
5	17,870	23,011	26,435
6	20,632	26,569	30,645
7	24,353	30,895	36,075
8	29,040	37,499	44,738
9	36,942	52,079	60,492
Urban			
Decile	IHS	UNHS-2	UNHS-3
1	14,176	19,469	19,609
2	18,661	26,316	27,030
3	22,917	32,912	33,784
4	27,852	39,891	42,119
5	32,869	47,728	52,021
6	38,400	57,033	62,148
7	46,601	69,631	77,175
8	55,898	90,716	97,744
9	76,974	141,933	141,457

Table 7: Spatial inequality of income for Uganda, Gini coefficient

	Gini coefficient			T-test statistic		
	1992/93	2002/03	2005/06	1992-2002	2002-2006	1992-2006
Uganda	0.365	0.428	0.408	5.89	-1.97	5.31
Place of residence						
Rural	0.328	0.363	0.363	4.67	0.00	4.91
Urban	0.396	0.483	0.432	3.06	-2.08	1.65
Region						
Central	0.395	0.460	0.417	3.01	-2.31	1.30
Eastern	0.327	0.365	0.354	3.74	-0.84	2.33
Northern	0.345	0.350	0.331	0.38	-1.60	-1.20
Western	0.319	0.359	0.342	4.57	-1.69	2.47
Region (rural/urban)						
Central rural	0.329	0.372	0.376	2.47	0.25	3.05
Central urban	0.394	0.480	0.392	2.47	-2.84	-0.08
Eastern rural	0.321	0.338	0.326	1.39	-0.76	0.39
Eastern urban	0.319	0.403	0.441	4.92	1.60	5.20
Northern rural	0.337	0.326	0.300	-0.68	-1.84	-2.98
Northern urban	0.373	0.434	0.381	2.28	-1.89	0.37
Western rural	0.310	0.333	0.319	2.42	-1.30	0.96
Western urban	0.352	0.448	0.420	4.81	-1.29	3.01

Table 8: Growth in CPAE and decomposition of poverty change into growth and inequality

	Growth in consumption expenditure per adult equivalent (CPAE)			Growth & inequality decomposition of poverty	
	Growth in mean CPAE	Growth rate in median CPAE	Rate of Pro-poor growth	Growth	Inequality
1992-2006					
National	3.69	2.95	3.05	-31.0	5.7
Rural	3.42	2.84	3.00	-30.7	4.6
Urban	3.69	3.33	2.54	-20.1	5.0
1992-2003					
National	4.09	2.68	2.92	-25.7	8.1
Rural	3.37	2.56	2.85	-22.2	4.6
Urban	5.64	3.80	3.28	-22.9	8.4
2003-2006					
National	3.61	4.87	4.43	-6.6	-1.2
Rural	4.77	4.73	4.42	-9.3	0.8
Urban	-1.34	2.91	1.09	1.3	-1.9

Notes: i) The estimates for the period 1992-2003 differ slightly from those presented in Okidi *et al*. (2007). These figures refer to the entire country.

ii) Rate of pro-poor growth is the growth rate giving the same rate of poverty reduction as observed but with no change in inequality.

Table 9: Decomposition of Income inequality

Sub-grouping		1992/93	2002/03	2005/06
Rural/urban	Between	14.6	20.7	15.6
	Within	85.4	79.3	84.4
Regions	Between	8.7	17.0	19.6
	Within	91.3	83.0	80.4
Educational attainment in levels	Between	14.6	27.3	25.4
	Within	85.4	72.7	74.6

Table 10: Poverty by Main Activity Sector of Household Head, 2005/06

	Pop. share	Mean CPAE	Poverty estimates			Contribution to:		
			P0	P1	P2	P0	P1	P2
Crop agriculture	53.1	30,400	36.8	10.2	4.1	62.9	62.0	61.2
Non-crop agriculture	4.9	38,500	28.1	7.7	3.0	4.5	4.3	4.2
Construction & mining	2.0	40,700	27.1	7.1	2.3	1.7	1.6	1.3
Manufacturing	4.7	51,900	21.8	5.2	2.0	3.3	2.8	2.7
Trade	9.1	55,700	14.9	4.0	1.5	4.3	4.1	3.8
Transport & comm.	2.5	52,000	16.7	3.6	1.1	1.3	1.0	0.8
Public services	5.0	75,100	8.5	1.0	0.2	1.4	0.6	0.3
Other services	3.7	62,800	17.9	5.5	2.4	2.1	2.3	2.5
Inactive	5.8	41,600	37.2	12.5	5.7	6.9	8.3	9.3
Off-temp	9.2	39,200	39.0	12.2	5.3	11.6	12.9	13.9

Notes: Sector of employment based on main activity involved in the past 7 days prior to interview

Table 11: Poverty by Main Activity Sector of Household Head, 2002/03

	Pop. share	Mean CPAE	Poverty estimates			Contribution to:		
			P0	P1	P2	P0	P1	P2
Crop agriculture	45.2	26,000	48.9	14.7	6.2	56.9	55.9	54.5
Non-crop agriculture	5.1	36,700	32.5	9.7	3.9	4.3	4.1	3.9
Construction & mining	2.2	37,100	33.0	10.8	4.8	1.9	2.0	2.1
Manufacturing	7.2	36,100	31.0	8.8	3.3	5.8	5.4	4.7
Trade	14.2	45,800	20.5	5.1	1.9	7.5	6.2	5.2
Transport & comm.	2.6	52,900	19.8	4.3	1.3	1.3	1.0	0.6
Public services	5.4	67,300	13.7	3.5	1.4	1.9	1.6	1.5
Other services	4.6	58,700	26.4	7.4	3.2	3.1	2.9	2.9
Inactive	4.9	37,800	43.1	16.8	8.7	5.4	6.9	8.3
Off-temp	8.6	30,100	53.9	19.3	9.7	12.0	14.0	16.3

Notes: Sector of employment based on main activity involved in the past 7 days prior to interview

Table 12: Poverty by Employment Status of Household Head

	Pop.	Mean	Poverty estimates			Contribution to:		
	share	CPAE	P0	P1	P2	P0	P1	P2
2005/06								
Self employment	79.7	35,500	33.6	9.5	3.8	86.1	86.5	86.7
Government employment	4.7	76,700	7.2	0.9	0.2	1.1	0.5	0.2
Private employment	11.9	50,200	24.0	6.7	2.7	9.2	9.1	8.9
Others	2.4	38,200	36.2	12.3	5.4	2.9	3.4	3.8
Inactive	1.3	72,800	19.2	3.3	1.2	0.8	0.5	0.4
2002/03								
Self employment	79.4	33,100	40.4	12.1	5.1	82.6	80.9	79.2
Government employment	4.9	67,000	16.2	4.0	1.5	2.1	1.7	1.4
Private employment	9.9	41,600	35.3	11.2	5.0	9.0	9.4	9.6
Others	1.1	45,400	31.7	10.4	4.7	0.9	0.9	1.0
Inactive	4.7	33,200	44.5	17.9	9.5	5.4	7.1	8.7

Notes: Employment status refers to the past 12 months prior to the interview

Table 13: Poverty by Most Important Source of Income to Household

	Pop.	Mean	Poverty estimates			Contribution to:		
	share	CPAE	P0	P1	P2	P0	P1	P2
2005/06								
Agriculture	51.5	33,000	31.5	8.3	3.2	61.1	59.0	56.9
Wage employment	20.7	65,500	18.0	4.8	1.8	14.0	13.6	13.2
Non-agric. enter	18.8	61,100	16.0	4.1	1.6	11.4	10.6	10.7
Transfers	4.8	68,900	16.0	4.0	1.5	2.9	2.6	2.5
Others	4.2	29,100	66.3	24.6	11.5	10.5	14.2	16.8
2002/03								
Agriculture	41.8	25,900	48.2	14.5	6.1	51.9	51.0	49.8
Wage employment	14.2	46,900	34.3	10.9	4.7	12.6	13.1	13.2
Self-employment	37.9	40,700	32.2	9.9	4.3	31.4	31.8	32.3
Transfers	4.4	47,200	29.1	8.8	4.2	3.3	3.3	3.6
Others	1.7	44,300	19.3	6.8	3.4	0.8	0.9	1.1

Notes: i) Self employment in 2002/03 and non-agricultural enterprises in 2005/06 need to be interpreted with
caution. It was not clear in the manual of instructions where the two terminologies were used interchangeably.
ii) Analysis done at household level.

Table 14: Poverty estimates with and without social spending

	Poverty estimates		
	P0	P1	P2
2005/06			
All expenditures	31.1	8.7	3.5
Excluding expenditures on health & education	39.2	11.8	5.0
2002/03			
All expenditures	38.8	11.9	5.1
Excluding expenditures on health & education	44.9	14.3	6.3

Figures

Figure 1: Poverty incidence curve for 2002/03 and 2005/06, Uganda
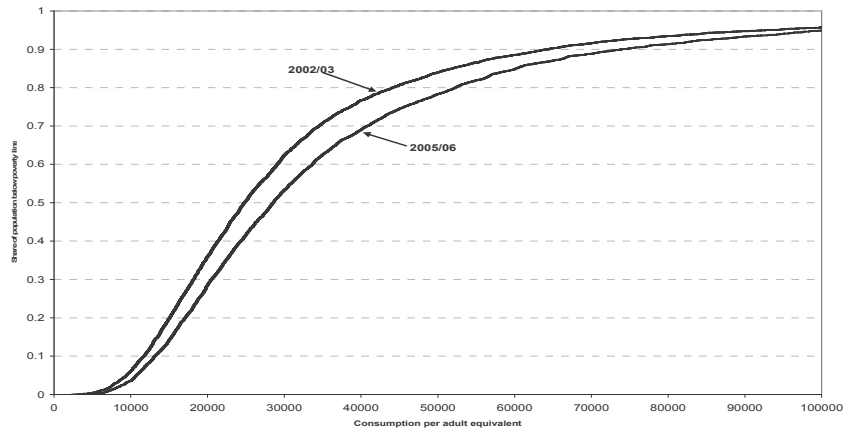

Figure 2: Poverty incidence curve for 2002/03 and 2005/06, Rural
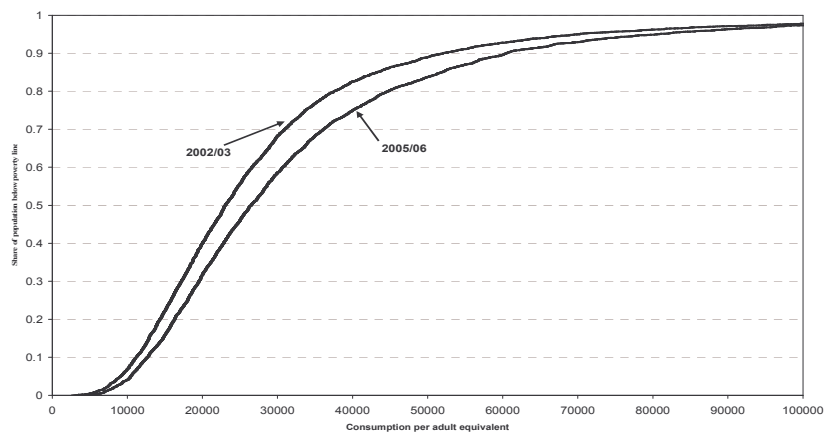

Figure 3: Poverty incidence curve for 2002/03 and 2005/06, Urban
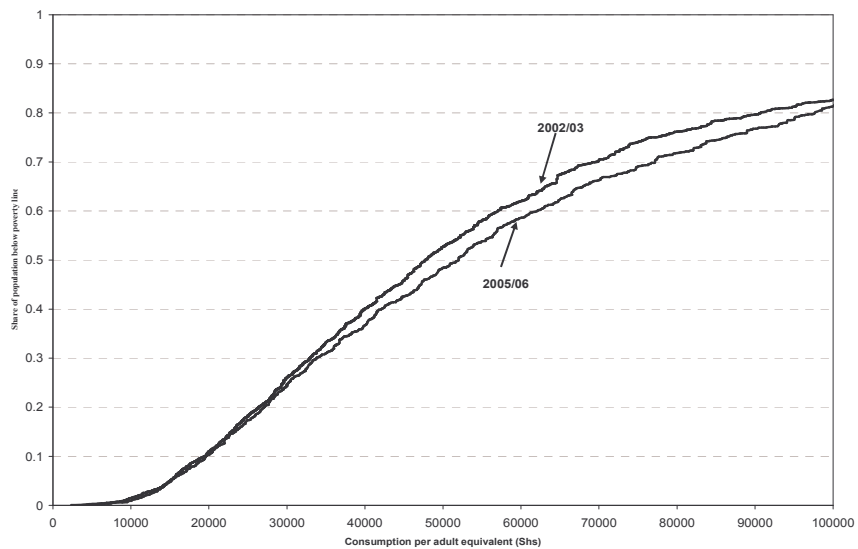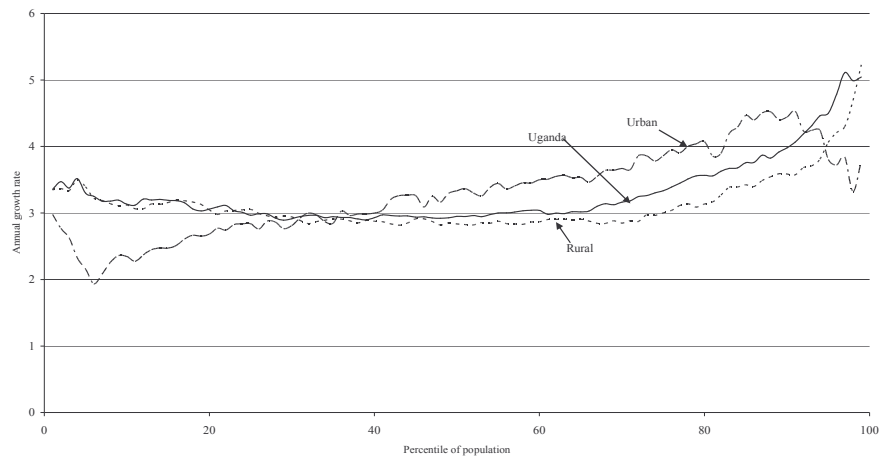
Figure 4: Growth incidence curve, 1992-2006

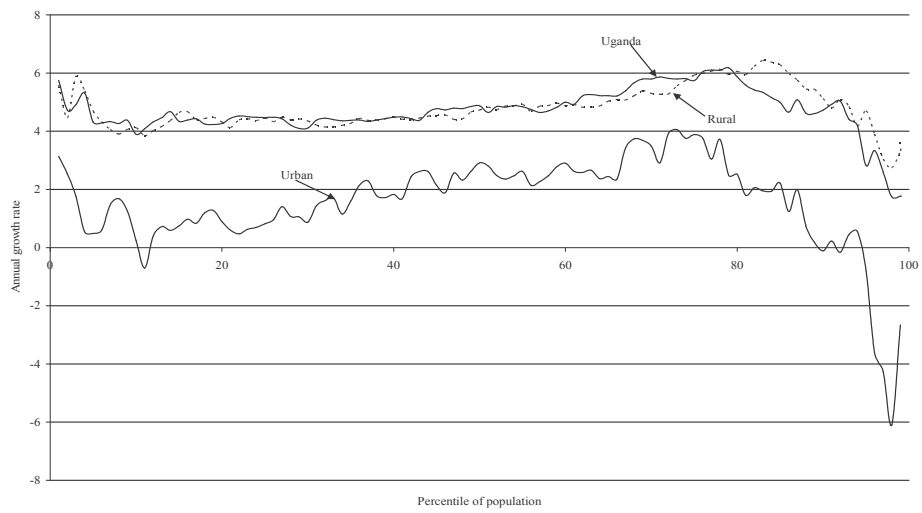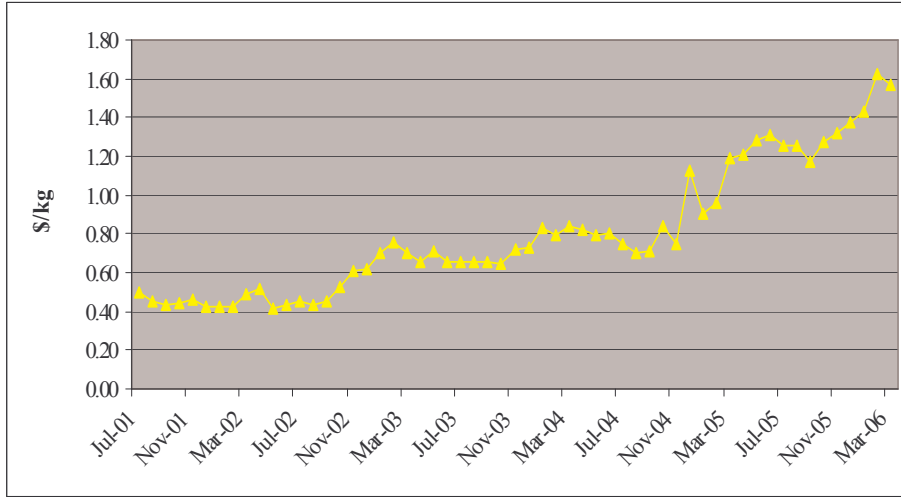**Figure 5: Growth incidence curve, 2002-2006**

Figure 6: Trends in coffee prices ($/kg), 2001-2006

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Appendices

Table A 1: Poverty estimates in UNHS-3, 2005/06

	Pop. share	Mean CPAE	Poverty estimates			Contribution to:		
			P0	P1	P2	P0	P1	P2
National	100.0	41,063	28.9	7.8	3.0	100.0	100.0	100.0
Rural	84.7	34,900	32.2	8.7	3.4	94.4	94.8	95.0
Urban	15.3	75,500	10.6	2.7	1.0	5.6	5.2	5.0
Central	32.1	57,600	16.4	3.6	1.3	18.2	14.9	13.6
East	27.6	32,300	35.9	9.1	3.4	34.3	32.1	31.3
North	15.6	23,600	56.8	19.1	8.3	30.6	38.1	42.3
West	24.8	40,400	19.7	4.7	1.6	16.9	15.0	12.8
Central rural	22.6	45,300	20.9	4.7	1.6	16.4	13.5	12.2
Central urban	9.4	87,200	5.5	1.1	0.5	1.8	1.3	1.4
Eastern rural	25.4	30,000	37.5	9.5	3.6	33.0	30.9	30.2
Eastern urban	2.2	59,300	16.9	4.4	1.5	1.3	1.2	1.1
Northern rural	13.7	21,600	60.4	20.5	8.9	28.6	35.8	40.1
Northern urban	1.9	38,300	31.3	9.2	3.5	2.1	2.3	2.2
Western rural	23.0	37,900	20.6	5.0	1.7	16.4	14.6	12.5
Western urban	1.8	73,700	7.4	1.8	0.5	0.5	0.4	0.3

Notes: Estimates exclude the districts of Bundibugyo, Kasese, Kitgum (including Pader) and Gulu

Table A 2: T-test Statistics by geographical coverage, 2005/06

Poverty measures	All districts	Excluding conflict districts in 1999/00	t-statistics
Headcount	31.1	28.9	2.26
Poverty gap	8.7	7.8	2.83
Severity of poverty	3.5	3.0	2.75

Notes: Excluded districts include Gulu, Pader, Kitgum, Bundibugyo and Kasese

Table A 3: Statistical tests on Poverty headcount index

	Prop. poor	Standard error	Confidence intervals Lower	Upper	Deff
2005/06					
National	0.311	0.007	0.297	0.324	1.637
Rural	0.342	0.008	0.327	0.357	1.657
Urban	0.137	0.012	0.114	0.160	1.353
Central	0.164	0.012	0.141	0.187	2.210
Eastern	0.359	0.014	0.331	0.386	1.553
Northern	0.607	0.014	0.579	0.634	1.198
Western	0.205	0.012	0.181	0.229	1.744
Central rural	0.209	0.015	0.180	0.239	2.109
Central urban	0.055	0.015	0.025	0.085	2.896
Eastern rural	0.375	0.015	0.346	0.404	1.610
Eastern urban	0.169	0.025	0.121	0.218	0.632
Northern rural	0.642	0.015	0.612	0.671	1.251
Northern urban	0.397	0.032	0.333	0.460	0.910
Western rural	0.214	0.013	0.188	0.240	1.799
Western urban	0.093	0.018	0.057	0.128	0.574
2002/03					
National	0.388	0.007	0.374	0.403	2.249
Rural	0.427	0.008	0.411	0.443	2.353
Urban	0.144	0.009	0.125	0.162	0.941
Central	0.223	0.012	0.200	0.245	2.250
Eastern	0.460	0.014	0.431	0.488	2.239
Northern	0.630	0.017	0.597	0.662	2.127
Western	0.329	0.014	0.302	0.357	2.100
Central rural	0.276	0.015	0.247	0.305	2.332
Central urban	0.078	0.012	0.054	0.103	1.667
Eastern rural	0.483	0.016	0.453	0.514	2.371
Eastern urban	0.179	0.017	0.147	0.211	0.386
Northern rural	0.650	0.018	0.615	0.685	2.305
Northern urban	0.389	0.030	0.331	0.448	0.531
Western rural	0.343	0.015	0.313	0.373	2.222
Western urban	0.186	0.017	0.153	0.219	0.384

Table A 4: Comparison of poverty estimates

Survey year		P0	P1	P2
2002/03	Our consumption aggregate estimate	31.08	8.75	3.53
	With allowance for measurement error	31.09	9.83	4.67
2005/06	Our consumption aggregate estimate	38.82	11.87	5.10
	With allowance for measurement error	38.10	14.69	8.43

Notes: We assume a measurement error with a standard error as big as a tenth of the standard error of our observed consumption aggregate (consumption expenditure per adult equivalent). Then we run poverty estimates between our consumption aggregate and new consumption aggregate after taking into account the possible measurement error (due to recall problems, non-response, etc). These two estimates are compared to have insights into the extent of the measurement error problem on our estimates.

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Economic Policy Research Centre (EPRC)
51 Pool Road Makerere University Campus P. O. Box 7841 Kampala, Uganda
Tel: 256-41-541023 Fax: 256-41-541022 Email: eprc@eprc.or.ug