# Changes in poverty in Uganda, 1992-1996


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**Abstract:** Analysis of four nationally representative household surveys from Uganda show a fall in poverty from 1992-1996. Using an absolute poverty line calculated following Ravallion and Bidani, we find 56% of Ugandans were poor in 1992 falling to 46% in 1996. The fall is due to growth, not redistribution, with cash crop farming, manufacturing and distribution sectors benefiting the most. The North has gained the least and poverty has increased amongst households whose heads were not working. The poorest fifth have experienced falling living standards in the last three surveys.

## 1. Introduction

According to macroeconomic data, Uganda in the 1990s is an economic success story, unfortunately rather rare in sub-Saharan Africa. Despite this, however, there is some concern within the country over whether the growth recorded in official statistics is reflected in rises in the living standards of the majority of the people, particularly the poor. Most people in the country, and almost all the poorest, depend on small holder agriculture for their livelihoods but there is little reliable data on that sector, apart from that provided by household surveys. The national accounts imply that Uganda's high growth has been driven disproportionately by growth in non-agricultural sectors. Hence, it is conceivable that little or none has benefited many poor farming households. This paper investigates this issue by comparing estimates of changes in living standards made from four recent household surveys.

The government of Uganda began monitoring living standards through household surveys with the Integrated Household Survey (henceforth, IHS) in 1992. This was a large survey, both in the size of the sample (10000 households) and the questionnaire (covering many topics other than consumption, such as income, employment, health, education, time use, fertility etc.). Each year thereafter there has been a Monitoring Survey covering around 5000 households and a shortened questionnaire, focusing mainly on consumption information. The data from three Monitoring Surveys (henceforth, MS-1, MS-2 and MS-3) are now available. These surveys should provide information on changes in poverty, measured by reference to private household consumption, over time in Uganda. The Monitoring Surveys were primarily designed for this purpose. All four surveys rely on similar sampling procedures and questionnaires[1] .

Poverty comparisons involve three main decisions: choice of a welfare measure; choice of a poverty line and choice of a poverty index for aggregation. We focus exclusively on household private consumption, although this is not to deny the importance of the many other dimensions of welfare or intra-household issues. We scale household private consumption by calorific equivalence scales and hence focus on consumption per adult equivalent. An absolute poverty line is estimated following Ravallion and Bidani (1994) and consists of a food poverty line and an estimate of non-food requirements. The food poverty line is national, giving the cost of obtaining sufficient calories given the kinds of food consumed by the poor. The non-food requirements are allowed to differ by region and by urban-rural residence, but in all cases are estimated as the non-food spending of those whose consumption is only equal to the food poverty line. We explore the sensitivity

[1] An earlier attempt to compare the IHS with an earlier survey, the Household Budget Survey of 1989, was unsuccessful (see Appleton, 1996). This survey was re-analysed as part of the preparation for the present paper, but still produced apparently incomparable results with the IHS and the Monitoring Surveys. Consumption in the HBS appears too high relative to the subsequent surveys. Appleton (1996) suggested that the incomparability arose from questionnaire design problems with the IHS. However, this suggestion appears less plausible given the evidence in this paper of the reasonably correspondence between the IHS results and those from the Monitoring Surveys (which were not subject to the same supposed questionnaire design problems). Sampling problems with the HBS may be a more likely explanation. Mean household size was one person higher in the HBS than in the census in 1991 and the subsequent household surveys.

of our results to alternative poverty lines. We focus mainly on the P-alpha poverty indices (Foster, Greer and Thorbecke, 1984) although some information on inequality and the distribution of welfare is provided. The analysis focuses mainly on changes over time, including some sectoral decompositions of these changes.

Our analysis complements the poverty study carried out on the surveys by the government's Coordination of Poverty Eradication Project and Department of Statistics (Republic of Uganda, 1997a). The earlier study did not include the Third Monitoring Survey and was conducted using a poverty line defined as two-thirds of mean consumption per adult equivalent in the IHS. The present paper derives a poverty line based on calorie requirements and updates the analysis to include the Third Monitoring Survey. It also includes some additional adjustments to ensure comparability of the consumption data, together with some further decompositions of interest. It should be noted, however, that the two studies, despite rather different methods, agree on the general direction of poverty trends in Uganda.

The paper is organised into three substantive parts: calculation of changes in mean consumption per capita over time; estimation of an absolute poverty line; and analysis of changes in poverty over time.

## 2. Measuring living standards in Uganda

Arguably the most important stage in poverty comparisons over time is obtaining reliable information on the variable used to measure household welfare, here centring on private consumption. Poverty statistics are merely scalar functions of the distribution of the welfare measure. Although it might be thought that private consumption could be directly taken from responses in the household surveys, in practice, a number of adjustments are necessary to ensure comparability across surveys. In this section we detail the adjustments necessary for Uganda, focusing on their implications for mean consumption per capita. Focusing upon the per capita mean is partly for convenience, but should also provide a useful guide for poverty comparisons. Over a period of four years it is unlikely that the distribution of consumption will change so much that poverty and mean consumption per capita will move in opposite directions (nor is it likely that there will be a sharp divergence between per capita and per adult equivalent values). Indeed, to anticipate the findings in Section 4, almost all the change in poverty over the Ugandan surveys can be attributed to changes in the mean of consumption rather than changes in its distribution.

### 2.1 Obtaining consistent estimates of consumption

Table 1 reports the estimates of consumption per capita as calculated in the official survey reports and after a number of adjustments[2]. The adjustments fall into three categories: adjustments for sampling, for questionnaire design and for prices.

[2] The figures differ very slightly from those in the official survey reports, perhaps due to subsequent cleaning of the data.

Sampling in the Ugandan surveys is relatively good[3]. All four surveys used the same sampling frame, drawn from the 1991 census. They drew large samples — around 10000 households in the IHS and 5000 in each MS — and were designed to be nationally representative. However, security problems led MS-2 and MS-3 to exclude Kitgum district[4]. We adjust for this by omitting Kitgum from all subsequent calculations (unless stated otherwise). Kitgum included 2.1% of Uganda's population in the 1991 census and is a relatively poor district. Its omission raises mean consumption per capita by around 1 per cent in the IHS, two-thirds of a per cent in the MS-1. Two other adjustments for sampling are less straightforward — correcting for seasonality and for revisions in the population multipliers — and are discussed after the adjustments for questionnaire design and prices.

The four surveys have similar sections on consumption in their questionnaires. In the Monitoring Surveys, the consumption sections were almost identical — there were some changes in the MS-3, but evidence suggests they have had no appreciable effect[5]. There are greater differences between the IHS and MS questionnaires. The IHS has rather more item codes, but unlike the MS, did not print them on the questionnaire: the expenditure sections of the IHS questionnaire were left blank for the interviewer to fill in. The IHS used multiple recall periods for expenditures in most cases: in the MS, expenditures were reported using only one recall period. The IHS collected information on health and education expenditures at an individual level, whereas the MS simply inquired about the total for the household[6]. In the absence of experimental evidence, it is hard to know how to adjust for these changes or gauge their effects. One indicator is the composition of

[3] There was a panel element to the surveys, with half of the households in each Monitoring Survey designed to come from enumeration areas previously surveyed in the IHS and half of these households intended to be the same households. This paper does not focus on the panel aspects of the survey, although these offer opportunities for further research.

[4] Some rural areas of Kabale district were not covered in the IHS; nor were parts of Kotido, Moroto, Kasese and Kisoro in the MS-2. These differences are not corrected for, as it is unclear how to adjust for them and their effects are likely to be minor.

[5] The consumption sections of the MS-3 questionnaire differ somewhat from those of the earlier two monitoring surveys. Most changes were on the section for food consumption, with more item codes and a column added for purchases away from home. On non-food consumption, the only changes were the addition of items for expenditures on traditional medicine and for purchases of cars. However, these changes do not seem to cause severe comparability problems. In particular, one might expect the more extensive food expenditure section to lead to greater reporting of food. However, food (and health expenditure) rises less between the MS-2 and MS-3 than the expenditure on the non-food items for which the questionnaires were unchanged. Excluding Kitgum and deflating by the CPI, expenditure on the non-food items treated consistently between the surveys rose by 16.5%. Expenditures on food, health and cars were effectively stagnant (rising by 0.2%). In these circumstances there seems little reason to adjust for the change in the questionnaires between MS-2 and MS-3.

[6] Where there were alternative recall periods for particular items in the IHS, we aimed to be consistent with conventions used in the Monitoring Surveys. The exception to this was for food purchases, where we used 30 day recall rather than short recall. The short recall data gave a food share (66%) substantially in excess of those in the Monitoring Surveys. In addition, it produced a less congruent ratio of consumption of own produced food to total food. The ratios were 50-52% for rural areas in the Monitoring Surveys and in the IHS using 30 day recall for food purchases, but 43% for the IHS using short recall.

expenditures. If the share of certain item groups changes markedly between the IHS and MS, this might be due to differences in questionnaires. In fact, as Table 2 shows, the composition of expenditures was fairly similar across the IHS and MS. The food share falls between IHS and MS-1, but similar falls occur within the monitoring surveys. Perhaps the most obvious discrepancy is in the share of expenditures on transport and communications: in the IHS, they account for 0.72% of total expenditure; in the MS-1, they account for 2.68%. This disparity reflects a printing error: the IHS omitted an item for fares on public transport. To adjust for this, we imputed a value for such an item using the regional shares in the MS-1[7]. Omission from the IHS of health expenditures for Arua district was dealt with in a similar manner. These adjustments together raise the mean consumption figure for the IHS by 1.6%. No attempt was made to adjust for other differences in questionnaire design and item coverage[8].

Three separate adjustments were made to get the consumption estimates into constant prices. First, home consumption of food was revalued to be at market prices. Interviewers were supposed to make sure that respondents valued home consumption of food in farm gate prices, although this convention has not always been well documented[9]. For major food items, it was possible to revalue home consumption at market prices using the ratio of the unit values for purchases to the unit values for home consumption as an estimate of the ratio of market to farm gate prices. The revaluations were done at the regional level, with median unit values for purchases and for home consumption being calculated for major food items for each region[10]. This was done separately for eight localities, the four regions divided into urban and rural areas (Table 3 refers). The revaluations increase home consumption of food by 20-40%. For MS-1 and MS-2, the revaluation is towards the upper end of this range; for the other surveys it is towards the lower end.

The second price adjustment was for inflation: the composite national CPI was used as the price deflator and expenditures converted into 1989 prices. Although the CPI is only collected for major urban areas, it does appear fairly reliable. During the period, there were no price controls or other distortions. Furthermore, an earlier exercise for the period

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[7] This is a striking example of sensitivity to questionnaire design. Both IHS and MS had an item for "other transport expenses", but only the MS questionnaire explicitly mentioned public transport fares as an example. To adjust for the change in questionnaire design, we did not include the item as reported in the IHS but instead assumed the item had the same share as in the MS-1 (with separate shares for rural and urban areas).

[8] An IHS item for expenditure on "weddings, funerals and other ceremonies for non-household members" was not included. The MS only had an item "expenditure on household functions".

[9] The convention is only documented in the manual of instructions for the Third Monitoring Survey.

[10] This was complicated by the fact that quantities could be reported in different units, including some unspecified measures such as "heaps", "bunches" etc. Where possible only metric measures were used. For some items most units codes were non-metric, in which case only reports with a single unit code were used to avoid having to make different units comparable. It was not necessary to convert quantities into metric units except when calculating calories per shilling for the food poverty line. For that purpose, conversion factors from Kayiso (1993) were used for non-standard unit codes for the few items where output was never reported in metric units.

1989-92 using unit values from household survey data had largely corroborated the CPI. Between 1989 and 1992, the alternative price index rose broadly in line with the CPI: by 135% compared to 127% (Appleton, 1996)[11]. Consumption was deflated differently according to the recall period: 365 day recall items were deflated using an average of the CPI over the previous twelve months; 30 day and shorter recall items were deflated using the CPI for the relevant month. We did not control for inflation within the MSs, since there it was small. Instead, we adjusted for inflation between the surveys by deflating all nominal values by the survey average value of the CPI. However, there was substantial inflation during the IHS surveys — prices at the end of the survey being 30% greater than prices at the beginning - so for that survey, deflators varied by the month in which a household was surveyed.

The third price adjustment was for regional variation in prices. Food prices are markedly higher in some areas of Uganda, particularly urban areas, than others. It was possible to use unit values for purchases of major food items to construct regional food price indices for each survey (Table 4 refers). Median unit values were used so as to make the results insensitive to outliers. The weights for the index were based on the national expenditure shares of the major food items and associated minor items. Although the index differs to some extent between the surveys, the qualitative pattern of regional price differences is uniform: Central region has the highest food prices, followed by East and West, with Northern regional having the lowest prices. Non-food prices were assumed to be constant across the country. It is sometimes argued that non-food prices may be higher in rural areas due to transport costs, but this is not well established. For example, prices of processed foods such as sugar — which might be thought to resemble non-food prices in requiring transport from factories to rural areas - were essentially uniform within the surveys. In a study of the Cote d'Ivoire, Grootaert and Kanbur (1994) found non-food prices to be generally lower in rural areas than urban areas[12]. The regional price adjustment is of importance primarily when making intra-country (eg urban-rural) comparisons rather than inter-temporal comparisons[13].

Seasonal variations in consumption were another reason for adjusting the data. The IHS was intended to cover twelve months (in fact it overran slightly) and hence mean consumption estimates should be fairly robust to seasonal effects. However, the MS were shorter — for example, the MS-1 running from only August to February. To see if seasonal effects were important, we pooled the data from the IHS and the Monitoring

[11] Although the alternative deflator increased by a similar amount as the CPI between the HBS and IHS, its movements during the IHS were somewhat different. In particular, it fell more towards the end of the survey than did the CPI. This was true even in areas — such as central urban — where the CPI might be expected to be more accurate. For this reason, it was decided to use the CPI to control for inflation rather than an alternative deflator based on unit values for food purchases in the surveys.

[12] Three rural areas were distinguished, with non-food price indices being 89 in East Forest, 102 in West Forest and 88 in the Savannah (the index was 100 in urban areas).

[13] It does raise the overall national expenditures somewhat, since prices were adjusted to survey median values. Urban areas were over sampled and this effect is not corrected for when calculating median values, so the survey prices disproportionately reflect higher urban prices.

Surveys and modelled the log of real consumption per capita as a function of dummy variables for region, survey and month of survey[14]. The coefficients on the months are reported in Table 5. They show high consumption in April to July (typically harvest months) and in December. The coefficients were used to adjust the reported consumption data to estimate households' average annual consumption[15]. This adjustment to remove the effect of seasonality was made primarily to ensure comparability across surveys. However, it should also allow household consumption to better reflect long term welfare.

The final adjustment is for the change in the system used to construct population multipliers[16]. The Statistics Department changed this system in the MS-3 and then revised the multipliers for the MS-2 to be in line with the new system. However, the multipliers for the MS-1 and IHS were not revised. The effect of the change was to give roughly equal weight to households in the "panel" elements of the surveys[17]. In MS-1, "old" households were assigned almost negligible weight, while "new" households in "old" enumeration areas were also given low multipliers (Table 6 refers)[18]. This issue is important because households in "old" urban EAs saw a large rise in living standards between MS-1 and MS-2, whilst those in "new" EAs saw a sharp fall. It would be desirable if the MS-1 population multipliers were revised using the same system as the MS-2 and MS-3[19]. However, until that is done, the MS-1 multipliers can be roughly amended to be similar to those of the MS-2. For those in "old" EAs, the weights used in

[14] These adjustments for seasonality should be regarded as provisional, since the data on month of survey for the MS-1 was very unclean. Around half of the households in the MS-1 were not included in the regression, due to bad values for the date of survey. Ideally, the regression should be re-run after the dates in the MS-1 are cleaned.

[15] These estimated seasonal effects were used to adjust expenditure data from the IHS and MS as follows. If $\beta j$ is the coefficient for month j, then the expenditure of a household surveyed in month j should be deflated by $\exp(\beta j) — \exp(\Sigma_{j=1,11}\beta j/12)$.

[16] There are other adjustments for sampling which one could consider making to the data. The population shares in different regions change markedly between the surveys, not all of which may be genuine or explicable by changes in multipliers. For example, in the IHS, the Northern region (excluding Kitgum) comprises 18.6% of the population; in the MS-2, it is 16% (Table 12 refers).

[17] The samples of the monitoring surveys were designed so that half of the enumeration areas ("old" enumeration areas) would be ones previously surveyed in the IHS and within those enumeration areas, half the households ("old" households) would be ones previously surveyed in the IHS.

[18] The 5797 individuals in the old households in the MS-1 when weighted represented only 22935 individuals out of the country's population of 17million. The 6110 people in the "new" households in "old" EAs, represented 0.71m. The 10918 people in the new EAs were taken to represent the remaining estimated 16.75m members of Uganda's population. By contrast, in the MS-2, although the proportions of the sample in old households and old EAs were similar to those in the MS-1, their weights were much higher. People in new EAs were taken to represent only 8.76m of the estimated 17.75m population.

[19] The IHS weights might not need to be revised, since there were no "old" EAs and households at that time to be differentially weighted.

the MS-2 can be used[20]. For those in new EAs, the MS-1 multipliers can be used after scaling them downwards to give them the same relative weight as new EAs have in the MS-2[21]. With both new and old EAs, the amended MS-1 weights were deflated to allow for population growth between MS-1 and MS-2. Using the amended weights, the estimate of population using MS-1 is 0.2% below that using the old weights, which seems an acceptable margin of error. However, the amended weights do alter estimates of per capita consumption in the MS-1 substantially, raising it in rural areas and lowering it in urban areas.

## 2.2 Changes in mean consumption per capita

The bottom line fully adjusted figures imply a 16.8% rise in consumption per capita between 1992 and 1995/6. For both rural and urban areas separately, the rise is slightly less — at 15.5% and 13.9% respectively. This discrepancy between the national and disaggregated figures can be explained by the increase in the estimate of the relative size of the urban population from 12.5% in the IHS to 14% in the MS-3. The overall change in bottom line fully adjusted figures is fairly similar to the change in the top line, unadjusted statistics: the results are not driven by the adjustments to the data. Taking the consumption figures as calculated in the official survey reports and deflating by the CPI implies a 19.3% rise between 1992 and 1995/6. The adjustments lead to a small downward revision of the unadjusted figures because of the adjustments for the omission of public transport fees in 1992, for the inclusion of Kitgum in 1992 and for seasonality in 1995/6.

The growth in mean consumption per capita implied by the household data broadly coincides with that estimated in the national accounts (Table 7 refers)[22]. It is hard to make precise comparisons because the surveys do not coincide exactly with the fiscal years (July to June) in which national accounts are reported. The IHS ran from February 1992 to around March 1993, spanning both fiscal years 1991/92 and 1992/93. If we take a weighted average of the national accounts estimates for those two years (with weights corresponding to the number of months overlapping with the IHS), real consumption per capita is 6409 Ugandan shillings per month. The MS-3 ran from August 1995 to June 1996, so it should be fairly comparable with the national accounts estimate of 7320

[20] 17 "old" EAs could not be matched with those in the MS-2. For these EAs, new multipliers were constructed by first taking the average over the new and old households in the EA of the MS-1 multipliers. This was then scaled upwards by the ratio of the total MS-2 weight given to people sampled from old EAs to the total MS-1 weight to people sampled from old EAs.

[21] To do this, we scale using the ratio of the total weight given to people sampled from new EAs in the MS-2 to the total weight given to people sample from the new EAs in the MS-1.

[22] Note that the figures in Table 7 differ from "constant price consumption" as reported in the national accounts, since they use the CPI rather than GDP deflator. The two estimates are not strictly independent: household survey data is one source used when estimating consumption in the national accounts. However, some of the Monitoring Surveys may not have been used for the national accounts estimates, as they have only recently been cleaned and officially reported on.

Ugandan shillings for fiscal 1995/96. Consequently, from the national accounts, we would expect private consumption to have risen by 14% between the IHS and the MS-3. This is somewhat less than what the household data show, but still reasonably close. However, both the level of consumption and the pattern of changes are different in the macro and micro data. The household surveys report substantially lower levels of private consumption than the national accounts: in some cases, the discrepancy is almost a third.

Although the two sources agree that there was a marked rise in consumption in 1994/95, the national accounts imply consumption fell in 1993/94 whereas in the household data the largest rise is observed during this period (IHS to MS-1)[23]. Variations in the weather may be important in understanding the change in welfare between IHS and MS-1. The Republic of Uganda (1994) reported the seasonal conditions are being:

| Year | First Season | Second Season |
|---|---|---|
| 1991 | Very good | Rains very late; harvest below average |
| 1992 | Drought (very poor crops in the West. Elsewhere average despite late rains) | Excellent |
| 1993 | Very good | Rains late; drought in East and North, good conditions in West |
| 1994 | Rains rather late, but excellent | - |

Both the IHS and MS-1 are likely to have been adversely affected by the weather, although different regions have suffered at different times. It is possible that the national accounts understate the effects of the 1992 drought, although more research is necessary to reconcile the two sources.

Mean consumption per capita rises strongly between each survey: by 7.3% between IHS and MS-1; by 4.5% between MS-1 and MS-2; and by 4.2% between MS-2 and MS-3. However, the phasing of the increases in welfare over the three years is very different for urban and rural areas. In line with the national pattern, living standards in rural areas grow fairly steadily between each survey. However, in urban areas, almost all the growth in the period occurs between 1992 and 1993/4, when welfare rises by 12%. During the Monitoring Surveys, consumption per capita in urban areas rises by around 1% or less per annum.

[23] Note that using the official MS-1 multipliers, urban living standards are estimated to fall between MS-1 and MS-2. This is likely to be due to the change in the system for constructing multipliers between MS-1 and MS-2. Indeed, under provisional figures for the MS-2 reported in the Republic of Uganda (1996) using the same system for constructing multipliers as the MS-1 gave an estimate of mean consumption per capita in urban areas 10.9% higher than the final figures. This suggests that using the same system for constructing multipliers in both surveys would not produce a fall in consumption per capita in urban areas.

## 3. Defining an absolute poverty line for Uganda

As yet, there is no officially approved poverty line in Uganda[24]. In this section, we construct an absolute poverty line reflecting the monetary cost of meeting certain basic needs. When using a poverty line to evaluate improvements in living standards of the poor over time, it is desirable to fix the poverty line in real terms. If the poverty line is made relative and allowed to rise with improvements in general living standards, then it is possible that poverty will rise despite the living standards of the poor having risen. Whilst such an increase in relative poverty may be interesting, our focus in this paper is whether poorer people have become materially better off. This is not to deny that poverty ultimately has an important relative aspect and that countries may want to set higher poverty lines for policy purposes as they become more affluent. However, for the relatively short period analysed here, this does not seem to be a relevant issue.

Given that it is desirable to fix the poverty line over time in real terms, the issue arises over the level at which is should be fixed. One approach is to fix the poverty line with reference to some point of the distribution of consumption. This was done in an earlier analysis of the Ugandan data, taking the poverty line to be two-thirds of the mean consumption per capita in the IHS (Republic of Uganda, 1997). Although this poverty line is initially defined relative to general living standards, the fact that it is fixed in real terms over time makes it possible to assess changes in living standards. The problem with such an approach is that it is ultimately arbitrary – it is not clear why two-thirds of the mean is chosen, rather than three-fifths or any other ratio.

There are two main alternatives to arbitrarily fixing the poverty line relative to general living standards. One alternative is the "dollar a day" line used by the World Bank (1990), which sets the line at one dollar, in 1985 purchasing power parity exchange rates, per person per day. This is useful for international comparisons but still rather arbitrary. The more appealing alternative is to set the poverty line at some estimate of the costs of meeting basic needs. Making this operational is difficult because of the problem of defining what are "basic needs". In this paper, we follow the approach of Ravallion and Bidani (1994). In common with most of the literature, this approach focuses on defining food-related needs and only indirectly estimates non-food requirements. We address the issue of non-food requirements in section 3.3. Food-related needs are commonly reduced to energy requirements only. This is clearly a simplification, as protein, vitamins and other nutrients are also required from food. People also value food in terms of taste and variety, and it is rather austere to neglect this aspect. In the case of Uganda, we explicitly focus

[24] Kikafunda, Serunjogi and Migadde (1992) have estimated a nutrition-based absolute poverty line for Uganda using the 1989/90 Household Budget Survey. They arrive at a figure of 6745 Ugandan Shillings per month per person. This is somewhat higher than the estimate in this paper of 6252 Ugandan Shillings (1989 prices) per adult equivalent per month. The use of the HBS, which excludes much of the Northern region and has higher consumption estimates may partially account for the discrepancy. There are also differences in method: Kikafunda et al used regional food baskets and appear to have allowed for very heavy levels of meat consumption. In Western rural and many other areas, their baskets allow the poor to eat 64% as much meat (in kg) as matooke (see Table 7, p38). By contrast, in this paper, the ratio of meat to matooke weights in the food basket is 1.6%.

only on calories. However, we find the cost of obtaining calorie requirements based on the typical diet of the poor in Uganda. Presumably this diet reflects, at least in part, non-calorie food needs and preferences for variety. Consequently, our method should implicitly allow for some non-calorie food requirements.

We estimate absolute poverty lines using the First Monitoring Survey. This was chosen since it is fully national but is more comparable than the IHS with the other Monitoring Surveys (in terms of questionnaire design).

### 3.1 Calorie requirements and equivalence scales

The first step in defining a calorie-based poverty line is specifying how many calories are "sufficient". Unfortunately, there is no consensus in the literature on setting poverty lines as to how many calories are required. Recent World Bank Poverty Assessments of sub-Saharan African countries have drawn poverty lines based on varying calorific requirements, from a low of 1,700 calories per day in urban Ethiopia to a maximum of 2,700 calories in the Gambia (Hanmer, Pyatt and White, 1997). In most of the literature, the choice of the number of calories underlying the poverty line was not justified by references to work by nutritionists specifying energy requirements. Lipton and Ravallion (1995) identify the energy requirements set by WHO (1985) as the most widely used “official estimates”. Consequently, we adopt these standards for Uganda. As shown in Table 8, the WHO requirements vary with age, sex, intensity of work, pregnancy and lactation. We first define the poverty line according to the needs of a man, aged 18-30[25]. It seems natural to focus on requirements for moderate work. Although some Ugandans are engaged in heavy work, this is not universal. Nor does it seem defensible to argue that a predominantly agricultural population is engaged in "light" work. From Table 8, it can be seen that the WHO recommends 3000 calories a day for men aged 18-30 engaged in moderate work. This is more than required for any of the calorie-based absolute poverty lines used by the World Bank elsewhere in sub-Saharan Africa[26].

Energy requirements differ by age and sex. One way to allow for this is to calculate calorific "adult equivalence scales" from Table 8. The scale for a person of a given age and sex category is equal to the ratio of the recommended intake for such a person divided by 3000, the requirements for the reference category of men aged 18-30. These scales will

[25] The choice of age is not substantive, because, as explained below, when applying the poverty line to Ugandan households we adjust for age-differences in calorific requirements. The choice of sex is more important, since we do not adjust for sex-differences in calorific requirements. However, given that sex adjustments are not made, it is appropriate to focus on energy requirements of the sex believed to have higher energy requirements, i.e. males.

[26] It is important to note that falling below the recommended energy intakes does not imply starvation or even malnutrition. The allowances include a safety factor required only for individuals undergoing periods of illness, injury or stress. Moreover, Lipton (1983) argued that mean adult weights in most tropical places lie 15-30% below reference weights used in estimating energy requirements. Sukhatme (1978) suggested that because of significant interpersonal and intertemporal differences in calorie requirements, recommended allowances should be reduced by around 15% when estimating malnutrition.

range from 0.273 for children under one year of age to one. Total household consumption can then be divided by the total number of adult equivalents in the household to give household consumption per adult equivalent. Household consumption per adult equivalent can then be compared with the poverty line (for men aged 18-30). If household consumption per adult equivalent is below the poverty line, then the household does not have sufficient consumption to meet the recommended calorie requirements of members.

The adjustments for sex differences in the Table 8 seem questionable. A woman aged 18-30 would have 0.7 of the weight of man using calorific equivalence scales. Given that the equivalence scales are to be used to assess people's relative needs, the author is rather uncomfortable in making such a large adjustment for sex differences. Even on purely nutritional grounds, the adjustment seems questionable. It is not clear why the energy requirements for men increase by 400 calories when moving from "light" to "heavy" work, when those for women increase by only 100 calories. Presumably, in the calculations underlying Table 8, light and moderate work mean different things for men and for women. In the case of a predominantly agricultural country such as Uganda, where women carry out much of the work on the land, it is not clear that women's work is generally less energy intensive than men's. Although men may usually do the heavier tasks, such as clearing and digging, these tasks are often infrequent. Ugandan women are reported to work much longer hours than men, especially when domestic work is included[27]. The issue is further complicated when one considers the adjustments for lactation and pregnancy: the household data does not allow one to identify the women for whom one should make these adjustments. However, given Uganda's high fertility rate, many women are likely to be pregnant or lactating. As a result of these misgivings, we do not allow for sex differences when calculating calorific equivalence scales and simply use the WHO calorie requirements for males to derive equivalence scales which we apply to both males and females[28]. The equivalence scales used are given in Table 8.

Applying the adult equivalence scales in Table 8 to the sample of the First Monitoring Survey, we find that the estimated total population of 17.8 million corresponds to 13.6 million adult equivalents. Thus in the case of Uganda, the requirement of 3000 calories per adult equivalent corresponds to an average requirement of 2283 calories per capita in the country. Whilst the 3000 calorie per adult equivalent requirement seemed rather high compared to that assumed in poverty lines for other countries, the per capita requirement is not so far from requirements assumed in other studies[29].

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[27] One report based on observation of three communities reported that women worked between 12 and 18 hours a day, with a mean of 15 hours (UNICEF/ACFODE, 1988). Figures for men were not given, but are unlikely to have been at those levels. In the IHS, information on time use is reported for the busiest twelve hours of the day: on average in this period women work an extra hour and a half more than men. This differential arises only in rural areas.

[28] This procedure was also followed by Appleton (1996) and in World Bank (1996).

[29] For example, Ravallion and Bidani (1994) base their poverty line for Indonesia around a requirement of 2100 calories per capita per day.

It should be noted that the equivalence scales assume that non-food requirements vary by age in the same way that food requirements vary. Nor do the scales allow for the economies of scale that are likely to arise with larger households. Estimating non-food requirements by age or household economies of scale is a difficult exercise, seldom attempted in assessments of poverty[30].

## 3.2 The food poverty line

Many combinations of foods ("food baskets") could meet the requirement of 3000 calories. However, it is most relevant to construct a food basket based upon the actual consumption patterns of the poor in Uganda. Of course, since the poverty line has not yet been defined, one cannot know who exactly the poor are. In the case of Indonesia, Ravallion and Bidani (1994) focused on the consumption patterns of the poorest 15%. This was presumably because a poverty line defined using an alternative method had found 15% of Indonesians to be poor. In the case of Uganda, 15% seems rather a low figure so we have focused on the poorest 50% of people, ranked by consumption per adult equivalent[31]. Previous work using the IHS data had defined a poverty line based on the consumption patterns of the bottom 50% and found that over half Ugandans lived below this line (World Bank, 1996). However, it remains a rather unsatisfactory feature of the Ravallion and Bidani method that devising the poverty line depends on some initial judgement about how many people are poor. In the Ugandan case, the line is sensitive to this judgement. For example, if the food poverty line derived here had been based on the average consumption patterns of all Ugandans, rather than just the poorest 50%, the line would have been 21% higher.

To calculate the food poverty line, we first use the MS-1 data to estimate the mean quantities of 28 major food items (listed in Table 9) consumed by the poorest 50%. These mean quantities constitute a reference food basket: the typical food basket of the poor. We aim to identify a food basket yielding 3000 calories where items are consumed in the same proportion as in the reference food basket. Although the MS-1 included direct questions about quantities consumed, these were often reported in non-metric and sometimes unspecified units (e.g. heaps, bunches, etc). Rather than attempt to convert all units into kilograms, an indirect approach was taken to estimating quantities. Quantities were estimated as values (including home consumption) divided by prices per kilogram. Prices per kilogram were estimated as the survey median unit values of purchases made in a few unit codes, typically metric only. These prices are reported in column 2 of Table 9. In one or two cases — notably matooke — there were insufficient metric responses and conversion factors (for the three types of "bunches") had to be used; these conversion factors were taken from Kayiso (1993). When calculating quantities, values were adjusted

[30] Lanjouw and Ravallion (1996) estimate household economies of scale based on the effects of household size on welfare indicators such as stunting, wasting and the food share. Their preferred estimate, based on stunting, gives strong economies of scale but estimates based on the other two welfare indicators do not.

[31] The consumption estimates are fully adjusted as detailed in Section 2.

for regional price differences and home consumption revalued into market prices.

We then estimate how many calories were generated by the reference food basket. We do this using the calorific values of East African foods as reported by West (1987), the relevant numbers (in calories per kilogram) being reproduced in column 3 of Table 9. For some foods, part of the weight of the food is not of nutritional value being inedible or lost in preparation. Estimates of the percentage of the food retained for consumption are given in column 4 of Table 9. Multiplying the mean quantities of foods consumed by their calorific value and retention rates, we estimated that the poorest 50% in Uganda consumed around 1373 calories per day per person (not per adult equivalent). Consequently, the typical diet of poor Ugandans would have to be scaled upwards by a factor of 2.19 in order to generate 3000 calories per person per day. Scaling up the reference food basket by this factor gives us the food basket reported in column 1 of Table 9. This is the food basket that we cost in order to identify the food poverty line. The amount of calories provided per day from each food item in the basket is reported in column 5. The food basket is very varied, with at least five important staples (matooke, sweet potatoes, cassava, maize, millet and sorghum). This reflects regional variations in staple crops across the country. The basket allows for some expenditure on a variety of non-staple foods. These items should help meet other nutritional needs not specified in detail — for protein, vitamins and minerals. The total cost of the food basket, our food poverty line, is 11463 Uganda Shillings per month (in the average prices of the MS-1 survey; these MS-1 prices must be deflated by 2.63 to be converted to the 1989 prices used in reporting most real expenditures in this paper).

The variety of staples is an argument for estimating separate regional poverty lines. For example, matooke is rarely consumed in the north but is common in the West. This regional variation in staples may reflect differences in availability, relative prices, tastes and income. Allowing for such differences in food baskets is likely to lead to different food poverty lines, since staples differ in the amount of calories provided per shilling. For example, matooke is a rather expensive way of obtaining calories (17.4 shillings per 100 calories) whereas sorghum is relatively cheap (6.4 shillings per 100 calories). Whether one wishes to allow for different regional food baskets is a difficult normative issue. There is a technical problem (albeit solvable) in making sure the baskets do not differ because of regional differences in income. The broader question seems to depend partly on whether one is interested in comparing incomes or satisfaction of basic needs. If one is solely interested in comparing real incomes ("economic welfare"), with the poverty line acting only as a somewhat arbitrary way of identifying the poor, then a single national food basket seems preferable. However, if one is concerned with whether people in different regions are obtaining adequate calories (part of "basic needs"), then regional food baskets are perhaps more appropriate. Future work will investigate the extent to which different regional food baskets lead to substantially different food poverty lines in Uganda. However, this exercise is probably more important when comparing poverty levels across regions than when comparing changes in national poverty over time (this was the finding of Dercon and Krishnan, 1998, for Ethiopia).

### 3.3 Non-food requirements

As is standard in the literature, we make no attempt to itemise non-food requirements. Such an itemisation would involve making controversial judgements about the necessity of a myriad of small or infrequently consumed heterogeneous non-food goods and services. To avoid entering such a quagmire, we follow the common practice of estimating non-food requirements indirectly by looking at the non-food spending of poorer people. In particular, we follow Ravallion and Bidani (1994) in identifying non-food requirements, NF, as the non-food expenditure of those whose expenditure is just equal to the food poverty line, $z_f$. The rationale for this is that, since at this level of welfare the poor have sacrificed some of their need for calories, the non-food expenditures they have chosen to give priority to should also be regarded as meeting essential needs. This level of non-food expenditure can be estimated using a regression of the food share $s_i$ of household i on the log ratio of consumption per adult equivalent, $y_i$, to the food poverty line, $z_i^f$, locational dummy variables, $D_{ij}$ and other variables, $w_i$, such as demographic composition[32].

$$s_i = \alpha + \beta \ln(y_i/z_i^f) + \gamma \ln(y_i/z_i^f)^2 + \Sigma_j \phi_j D_{ij} + \delta w_i + v_i \qquad (1)$$

where $v_i$ is an error term.

When $y_i=z_{if}$, the foodshare, $s_i$, in region j for a household with explanatory variables, $w_m$, is given by $\alpha + \phi_j + \delta w_m$. To calculate the foodshare to be used in the poverty line (column 1 of Table 11), we set $w_m$ equal to the mean characteristics of the poorest half of the population, ranked by real expenditure per adult equivalent. Required non-food expenditure, NF, is therefore $(1-\alpha - \phi_j - w_m \delta)z_{if}$. Thus the total poverty line, $z_j$, in location j is given by:

$$z_j = z^f_j (2 - \alpha - \phi_j - w_m \delta)$$

This method allows different locations to have different non-food requirements. For example, urban people often have to pay more for given accommodation than rural people. This may reflect differences in prices and perhaps social norms. By Engel's Law, urban people will also tend to have higher non-food ratios because they have higher consumption per adult equivalent. However, this effect does not contaminate the procedure because the regional effects, $\phi_j$, are estimated controlling for differences in consumption per adult equivalent.

The regression in equation (1) is reported in Table 10. The dependent variable is the share of those foods included in the food basket used to generate the poverty line (listed in Table 9) — items (e.g. "other foods") not included in the basket are treated as "non-food" items for the purposes of this exercise. The model predicts a mean food share of 0.566 for those whose real consumption per adult equivalent is just equal to the poverty line (column 1, table 11 refers). This gives a national poverty line of 16443 Uganda shillings per adult equivalent per month (MS-1 prices). Taking a purchasing power parity exchange

[32] The square of the log ratio of consumption to the poverty line is also included in the regression to improve goodness of fit.

rate of 369 shillings to the dollar, this is equivalent to $44.56 per adult equivalent a month. (At the official exchange rate of 1195 shillings per dollar, it amounts to $13.76 a month.) In the case of Uganda, the line is equivalent to $34 per capita per month and hence comparable the "$1 a day" poverty line sometimes used for international poverty comparisons by the World Bank.

Poverty lines differ between rural and urban areas because estimated non-food requirements vary (column 2, table 11). This is because the predicted food share when at the food poverty line is much lower in urban areas than in rural areas (e.g. 0.49 in Central urban compared to 0.68 in Western rural). Western rural has the lowest poverty line — 15189 Uganda shillings — whilst Central urban has the highest — 17314[33]. These regional differences in poverty lines are relatively modest. However, it should be noted that a single food basket is used for all regions and are costed at uniform national prices. Since food prices are much higher in urban areas, the difference between urban and rural poverty lines is much greater when valuing in nominal terms (and not at uniform national prices)[34]. In nominal terms, the poverty line for central urban is 106% higher than that in Western rural.

## 4. Changes in poverty and inequality

In the previous sections, we reported how we calculated our welfare measure (adjusted household consumption per adult equivalent) and the poverty line. Here we report the results of comparing welfare measures with the poverty line in the four surveys. We follow recent convention in using the Foster-Greer-Thorbecke, Pα, statistics to aggregate the data. These can be defined as:

$$P\alpha = 1/n \sum_{i=1,n} \{\max[z-c_i,0]/z\}^{\alpha}$$

where n is the number of individuals in the population; z is the poverty line; $c_i$ is the welfare measure (consumption per adult equivalent); and α is a parameter.

The Pα index has a number of desirable properties, notably that it encompasses a number of familiar poverty indices and that it is additively decomposable, a property exploited below. When α takes the values 0 or 1, the FGT index reduces to more familiar indicators. P0 is the headcount: the proportion of people living below the poverty line. This measure is often the focus of policy discussions, because it is so easily interpretable. However, it has a number of drawbacks compared to the other Pα statistics used which make it

[33] That Western rural should have the lowest poverty line raises some doubts about the appropriateness of working with a national food basket. One reason why the foodshare may be predicted to be higher in Western rural (and hence the poverty line lower) is that it is more expensive to obtain sufficient calories using matooke, a favoured staple in Western region.

[34] The food poverty lines in nominal terms (column 3, Table 10) are not equal to the food poverty lines in national prices scaled by the food price index reported in Table 3. This is because the food price index was based on the consumption patterns of the whole population, whereas the poverty line is based on the consumption patterns of the poorest half of the population.

important to check that results are robust to using alternative statistics. A chief drawback with the P0 indicator is that it is insensitive to changes in the welfare of the poor that do not take them above the poverty line. For example, if all the poor (only) became 50% poorer, the P0 index would not change. Conversely, the index will be very sensitive to changes in the welfare of those living close to the poverty line, as opposed to the very poor. The P1 index is not subject to this criticism and also has a ready interpretation as the "per capita aggregate poverty gap". That is to say, the mean shortfall of the welfare of the poor from the poverty line, expressed as a proportion of the poverty line and averaged across the population as a whole. It is thus one measure of the minimum cost of eliminating poverty through perfect transfers. The index is insensitive to transfers amongst the poor (for example, from the less poor to the very poor). $P\alpha$ indices with $\alpha>1$, such as P2, are sensitive to such transfers and for this reason are of interest. Although the P2 index does not suffer from the limitations noted earlier with P0 and P1, it has its own drawbacks. It is somewhat arbitrary — it is not clear why $\alpha=2$ is preferred to any other $\alpha>1$ — and has no obvious or intuitive interpretation. In addition, it will be more sensitive to low outliers in the data.

## 4.1 Poverty trends

Tables 12.1.1 through to Tables 12.4.2 present poverty statistics for the four surveys. Data are disaggregated by location, both by urban-rural and by the four regions of the country. For each survey, two tables are presented: one reporting poverty statistics using the absolute poverty line derived above; the other using only the food poverty line. The poverty rates assessed relative to the poverty line tell us those about those whose consumption is insufficient to meet our estimate of their basic needs. Poverty rates assessed relative to the food poverty line tell us about those whose consumption is insufficient to meet even their calorie needs. 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 (i.e. what percentage of national poverty is attributable to each location). Given that poverty statistics are estimates, it is useful to test whether changes in their values are statistically significant (Kakwani, 1990). We report tests of the significance of the changes in the poverty statistics between IHS and MS-3 in Table 13.

In the first survey, the IHS, nearly 56% of people were estimated to be below the poverty line and 35% below the food poverty line. These statistics show that absolute poverty levels were very high in Uganda. Most people did not have enough money to meet our estimate of their basic needs. More than one third did not have enough even to meet only their calorie requirements, let alone any other needs. These high poverty rates are perhaps not surprising given the very low national income of the country (ranked sixth lowest in the world in 1992 by the World Bank (1994)). Poverty rates were much lower in urban areas than rural areas, but were nonetheless substantial: 29% of urban people lived below the poverty line and one in eight lived below the food poverty line. There were pronounced regional differences in poverty rates. In the poorest area, Northern rural, 71% lived below the poverty line. However, poverty was widespread in all areas: even in the most prosperous area, Central urban, more than one in five people lived below the poverty

line. Urban areas suffered relatively less from poverty defined relative to the food poverty line only, but this is of questionable relevance given that above we showed non-food needs to be higher in urban areas.

Absolute poverty remained pervasive at the end of the four surveys. However, it did fall quite substantially. In the MS-3, 46% people were poor compared to 56% in the IHS. This 18% fall in the headcount was accompanied by a 17% rise in mean consumption per adult equivalent. This implies an elasticity of poverty with respect to growth of around minus one. This elasticity is rather low (in absolute terms): for example, in Nigeria, the figure is estimated to be –1.45 whilst in Ghana it is put at –1.73 (World Bank, 1995). However, this seems to reflect the high level of the poverty line rather than any regressive aspect of Uganda's pattern of growth. Using a lower poverty line, the food poverty line, the growth elasticity is higher, at –1.5. This reflects the larger proportionate fall in the number of people living below the food poverty, from 35% to 26% during the period. The other $P\alpha$ indices also show marked declines: indeed, the proportionate decline in the poverty indicators rises with $\alpha$. Whereas the P0 indicator fell by 18%, P1 fell by 26% and P2 by 70%. By any standards, the fall in poverty over a period of only four years has been substantial.

As poverty rates have fallen, the cost of interventions to reduce poverty has also fallen (although this is somewhat offset by population growth). Recall that the P1 index is proportional to cost (per adult equivalent) of eliminating poverty through perfectly targeted transfers. Our estimates imply that this minimum estimate of the cost of eliminating poverty through transfers has fallen by over a quarter[35]. The P1 index for the IHS implies a total annual cost of eliminating poverty through perfect transfers ("the simple sum") of 711,592 million Ugandan shillings (1993/4 prices) or $595 million (using the 1993 official exchange rate). The corresponding figures for 1995/96 are 581,907 million shillings (1993/4 prices) and $487 million. To remove poverty relative to the food poverty line through perfect targeting, the cost would have been $228 million in 1992 and $170 million in 1995/6[36].

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[35] The total cost of eliminating poverty through perfect targeting is given by $nP_1Z$ where n is the population and Z the poverty line. We include Kitgum in the population, although it was excluded from the estimate of $P_1$: since Kitgum is poorer than Uganda as a whole, the cost will be understated by around one percentage point.

[36] It is tempting to compare these figures with Uganda's external assistance in 1993 of $531 million. It can be seen that Uganda's present external assistance is roughly similar to the cost of eliminating poverty through perfect targeting. However, it cannot be assumed that poverty could be eradicated by channelling external assistance into transfers to the poor. Presumably the assistance currently has some impact in reducing poverty and thus channelling it to transfers would worsen the poverty gap that had to be filled by transfers. Transfers are unlikely to be perfect . An alternative assumption is that targeting is infeasible, in which can transfers must be uniform. The P1 measure gives a ratio of the cost of eliminating poverty through perfectly targeted transfers relative to that of uniform transfers. In 1995/6, it would have cost $3,225 million to eradicate poverty through uniform transfers to all Ugandans (assuming no administrative costs). Furthermore, if the transfers were used to fund private consumption, they would have to be perpetual. Poverty would be eliminated in one year but would return in the next. One-off transfers may have permanent benefits to the extent that they are saved and invested, but such saving would imply transfers would have to be correspondingly higher to raise the consumption of the poor to the poverty line. Substantial external assistance is likely to continue in the medium term, but donors

Poverty fell in both rural and urban areas. The mean rise in consumption per adult equivalent was higher in rural areas than urban areas (17% compared to 12%). However, poverty statistics fell proportionately more in urban than rural areas. The headcount fell by almost a third in urban areas (32%); the proportionate fall in rural areas was half of this (16%). Perhaps surprisingly, living standards in central urban areas grew modestly, by 6%, between the surveys. This may be partly a consequence of in-migration: the estimated share of the country's population in these areas rose by 0.8%, a proportionate increase in the size of the central urban population of over one ten percent. Western and Eastern urban areas experienced the largest gains, with very modest growth in Northern towns.

All regions had lower poverty in 1995/6 than in 1992, regardless of which $P\alpha$ statistic is used or whether the poverty is measured relative to the total poverty line or just the food poverty line. Furthermore, all these falls in poverty are statistically significant (Table 13 refers). However, the magnitude of the falls varied greatly. A key division appears to be between the Central and Western regions compared to the Northern and Eastern. Mean consumption per adult equivalent rose by 23% in Central region and 22% in Western, compared to 12.4% in Eastern and 8.7% in Northern. These movements in average living standards are reflected in the changes in the poverty statistics. Central region saw the sharpest fall in poverty, with the headcount falling by over a third, from 45% to 28%. In the West, the headcount fell by ten points, from 52.5% to 42.3%. In both Northern and Eastern regions, the headcount fell by only six points. On the $P_1$ and $P_2$ measures, the Eastern region has experienced the most modest fall in poverty. The poverty gap, $P_1$, falls by 53% in Central region but only 11% in Eastern. One measure of the severity of poverty, $P_2$, falls by 61% in Central region but only 9% in Eastern. The net effect of these regional disparities is to widen the gap in living standards between the Central and Western regions and the Northern and Eastern ones. In 1992, each region accounted for roughly a quarter of the poor in the country (exact contributions ranging from 23% for Central region to 28% for Eastern region). By 1995/6, Central region accounted for only 17% of the poor compared to Eastern region, which accounted for 34%. Defining poverty relative to the food poverty line only, the contrast is even more stark: although Eastern and Northern regions comprise less than half the population of Uganda, in 1995/6, they accounted for nearly two-thirds (65.8%) of those whose total consumption is insufficient even to meet their calorie needs. (In 1992, they accounted for 55%). It is noteworthy that this occurred during a time of administrative and fiscal decentralisation. These institutional changes are surely not responsible for the increasing spatial disparity in welfare and poverty. However, the widening geographic inequalities will require greater government redistribution between regions.

As discussed in Section 2.2, average living standards in Uganda grew strongly between each survey. Poverty at the national level also fell between each survey on all measures. However, the improvements between MS-1 and MS-2 are only very modest. Most of the gains come between IHS and MS-1 and between MS-2 and MS-3. Indeed, in urban areas and in Eastern region, poverty rises between the MS-1 and MS-2. The other notable

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cannot be assumed to be willing to pay indefinitely. Finally, much of the external assistance may be loans rather than grants or tied to particular imports. Nonetheless, it remains a legitimate question whether some external assistance could make a larger impact on poverty if channelled directly to the poor.

exception to the trend of falling poverty comes between the MS-2 and MS-3, when poverty statistics for the North worsen.

It is important to assess whether the conclusion that poverty fell between the IHS and MS-3 is robust to choice of the poverty line. Figure 1 shows the results of such "dominance analysis" by plotting the "poverty incidence curves" for the four surveys. The poverty incidence curves plot the headcount indices on the y-axis against different poverty lines (expressed as multiples of the original poverty line) on the x-axis. As the poverty incidence curve for the IHS is above that for the MS-3, we can see that for all poverty lines, there would be a higher headcount in the IHS than in the MS-3. Given such "first-order" dominance, it also follows that poverty would be higher in the IHS than MS-3 for all absolute poverty lines for all $P\alpha$ statistics other than P0. By contrast, we can see that the poverty incidence curves for IHS, MS-1 and MS-2 intersect at points, implying that neither dominates the other. For some high poverty lines, the MS-2 gives higher poverty rates than the MS-1. The poverty incidence line for the MS-3 is below those for the MS-1 and MS-2 for most poverty lines. However, this is not true for very low poverty lines. The poverty incidence line for MS-1 and MS-3 cross at 52% of the poverty line; such a line identifies around 12% of the population as poor in the MS-1 and MS-3. This implies that the position of the very poorest households may have deteriorated during the monitoring surveys.

### 4.2 Inequality

Poverty statistics focus only on the lower part of the distribution of welfare and even within that part can mask interesting features due to the aggregation involved. It is more informative to look at the distribution in its entirety, which is close to what was done at the end of the previous section with Figure 1. One simple way of presenting the distribution in tabular form is to present mean consumption per adult equivalent by decile (Table 14 refers). As implied by the dominance analysis, all percentiles have higher mean consumption per adult equivalent in the MS-3 than in the IHS. Comparing the relative gains (not tabulated), there is some tendency for the poorer and richer deciles to gain more than the middle deciles. Nonetheless, the gains are generally fairly uniform. They range from the low of a 14% rise in mean consumption per adult equivalent experienced by the sixth decile to the high of a 19% improvement enjoyed the third and nineth deciles. These conclusions for deciles at the national level hold broadly true for rural areas. However, in urban areas, there is a marked disparity in the gains in living standards during the surveys. The poorest 60% gain substantially — for most deciles except the second poorest, mean consumption per adult equivalent rises by over one fifth. For other deciles, the gain is around 15-18% except for the most affluent decile for which mean per capita consumption rises by only 6.5%.

Despite the strong improvements in living standards from the first to the last survey, there are some disquieting results from trends during the monitoring surveys alone. Table 14 confirms the implication of the dominance analysis that the very poorest have become poorer over the course of the monitoring surveys. Mean consumption per adult equivalent of the poorest 10% has fallen by 5% between MS-1 and MS-3. The next poorest 10% saw

only a negligible rise. In fact, even this rise only comes about because the increased urbanisation between the surveys. Within urban and rural areas separately, the second poorest decile experienced falls in mean consumption per adult equivalent between MS-1 and MS-3. In urban areas, most deciles except the third poorest and the most affluent two experienced falls in mean consumption per adult equivalent.

Table 15 reports the Gini coefficients for the surveys as a measure of the overall inequality in consumption per capita. As might be expected from Table 14, inequality in rural and national areas is virtually unchanged from the first to last surveys. However, in urban areas there is evidence of an improvement in the progressivity of the distribution.

One implication of the lack of change in the degree of inequality within Uganda is that most of the reduction in poverty can be attributed to overall growth rather than any increased progressivity in the distribution of welfare. This can be confirmed by decomposing the change in poverty statistics between IHS and MS-3 using the growth and distribution decomposition proposed by Datt and Ravallion (1991). This decomposes the change in a poverty indicator P for two years, t and t+1 into three components: growth, G, distribution, D, and a residual:

$$P_{t+1} - P_t = G + D + R$$

The growth component, G, is the difference between the initial poverty indicator, $P_t$ and what would have arisen from distributionally neutral growth. That is to say, if there was the same mean per capita consumption, M, as in year t+1 but the same relative distribution (Lorenz curve, L) as in t.

$$G=P(M_{t+1},L_t) - P_t$$

The distribution component, D, is the difference between the initial poverty indicator, $P_t$, and what would have arisen from a pure distributional change. That is to say, if there was the same mean per capita consumption as in year t but the same relative distribution as in t+1

$$D=P(M_t,L_{t+1}) - P_t$$

Table 16 applies this decomposition. All of the fall in the poverty headcount (whether defined relative to the poverty line or food poverty line) can be attributed to growth, as can all of the fall in the poverty gap. For the other poverty indices, the contribution of shifts in the distribution of welfare to the change in poverty is very small. Growth always accounts for 96% or more of the change in the poverty statistics[37].

[37] This result differs from that of Datt and Ravallion (1991) for rural India and Brazil in 1980s. In rural India, improvements in the distribution of per capita consumption reduced the headcount $P_1$ from 16% to 11%. In Brazil, the distribution of per capita consumption worsened, implying a rise in $P_1$ from 10% to 13%.

## 4.3 Sectoral decomposition

Poverty statistics can be disaggregated in many ways. One interesting disaggregation is by economic sector, as this provides a potential link between macroeconomic events and households welfare. Table 17 classifies households into mutually exclusive sectors roughly corresponding to those used in standard national accounts. With two exceptions, the classification is based upon the main industry in which the household head works. One exception is for households where the head's main activity is crop farming. These households were divided into two depending on whether they grew any non-food cash crops (mainly coffee, with some cotton, tobacco, tea and other non-food crops). Typically, such households will obtain more revenue from food crops, but are still assigned to the cash crop sector. The other exception is for households were the head is not working (mainly households with retired heads); these households were placed into a separate category "not working", although some members may in fact be generating income. The classification is a convenience designed to obtain mutually exclusive assignments of households to sectors given the data constraints (which include the absence of data on income by sector in the monitoring surveys). In reality, households may work in many industries and in some cases the main industry in which the head works may not be the most important source of income to the household.

In 1992, most Ugandans (around 70%) lived in households where the head's main activity is crop farming[38]. Around one third of those individuals lived in households growing some non-food cash crop. This reflects the fact that coffee growing was widespread, despite the fact that in 1992/93 it accounted for only around 3-4% of total crop agricultural revenue in the country (World Bank, 1996). There is some evidence of movement into cash crops during the period of the surveys: the size of the sector increased from covering 23.5% of people in the IHS to covering 27.1% in the MS-3. However, there is no evidence of a movement out of agriculture: indeed, the sector grew in terms of population share during the surveys. Trade and government services were the next most populous sectors, covering around 6% of Ugandans. Trade did not change in size during the surveys, although households in the government sector decreased from 6.8% in the IHS to 5.6% in the MS-3. The "not working" sector cover was the next largest sector, growing from 4.3% to 4.8%. Manufacturing remained fairly constant at around three and a half percent of the population. Other sectors covered 2% or less of the population, with some sign of growth in the size of the service sector.

The food crop sector was the poorest of the major sectors in 1992/93 and experienced only relatively modest declines in poverty. The P0 and P1 indicators fell by less — both absolutely and relatively — than those for the country as a whole. Cash crop farming was the second poorest sector in the IHS, but experienced dramatic declines in poverty between the IHS and MS-3. The size of the declines can be gauged by comparing the proportionate falls in the poverty indicators for the cash crop sector with those for country as a whole. This comparison is fairly straightforward, since poverty rates in the cash crop

[38] Henceforth, for ease of expression, we will refer to people as being in a sector if their head's main activity is in that sector. This should not be taken to imply that all the people said to be in the sector actually work in the sector (only their household heads must work in the sector).

sector were of a similar magnitude to those in the country as a whole in the IHS. Between the IHS and MS-3, the headcount fell by 32% for the cash crop sector; for the country as a whole it fell by 18%. The P1 indicator fell by 49% for cash crop households; for Uganda, it fell by 26%. The P2 indicator for the cash crop sector fell by 58%; for the country as a whole it fell by 30%. These improvements in poverty were driven by above average rises in mean consumption per adult equivalent, which rose by a third in the sector. One factor underlying these gains is the rise in the world price for coffee during the period. The unit price of Ugandan coffee exports was as follows:

| | |
|---|---|
| 1991/92 | 0.86 (US$/kg) |
| 1992/93 | 0.82 |
| 1993/94 | 1.14 |
| 1994/95 | 2.55 |
| 1995/96 | 1.72 |
| 1996/97 | 1.33 |

source: Republic of Uganda (1994, 1997b)

At the height of the coffee boom, Uganda was receiving export prices for coffee three times greater than in 1992. Other factors are also important. Poor weather conditions in coffee growing areas depressed output in 1991/92. Output is also likely to have been enhanced by the price and market liberalization policies in the coffee sub-sector. Although these were initiated in 1990, there is likely to have been a lagged response in output due the time needed for newly planted coffee trees to bear fruit (around five years).

Poverty fell in nearly all sectors. One exception is mining, although this result may be questionable given the very small sample size. In addition, there was an increase in the headcount defined relative to the food poverty line in miscellaneous service sector (and a fall in mean consumption per adult equivalent fell), but other poverty statistics for that sector improved slightly. However, perhaps the most notable exception to the generally favourable trends was in the non-working sector, where all poverty indicators worsened despite rising mean consumption per adult equivalent. The headcount rose only slightly, but this masks more serious deterioration in other indicators. The P1 statistic rose by around one fifth; defined relative to the food poverty line only it rose by over one third. The P2 statistics fell proportionately more: the P2 figure defined relative to the food poverty line rising by a half.

The cash crop sector was not the only one to experience reductions in poverty much above the national trend. Manufacturing and trade, although starting from much lower initial levels of poverty, saw greater proportionate reductions. Hotels, construction, transport and communications also performed strongly. The government sector lagged somewhat behind the country as a whole in terms of growth in mean per capita consumption, although poverty rates fell comparably.

It is possible to decompose the national change in poverty into the effects of changes in poverty within sectors and movements between sectors (Ravallion and Huppi, 1991). This allows one to assess whether poverty has fallen because people within certain sectors have

become better off or because people have moved to more affluent sectors. If $P_t$ is a poverty indicator, then:

$$P_{t+1}-P_t = \Sigma (P_{it+1}-P_{it})n_{it} \quad \text{intra-sectoral effects}$$
$$\Sigma (n_{it+1}-n_{it})P_{it} \quad \text{inter-sectoral effects}$$
$$\Sigma (P_{it+1}-P_{it})(n_{it+1} - n_{it}) \quad \text{interaction effects}$$

where $n_{it}$ is the proportion of the population in sector i at time t and $P_{it}$ is the poverty indicator for sector i at time t. The interaction effects tell us whether people switched out of or into sectors where poverty was falling or not (if positive, people moved into sectors where poverty was falling).

Applying this methodology to Uganda in Table 18, we see that an improvement in the conditions of cash crop farmers and their families was responsible for over 45% of the improvement in poverty between the IHS and MS-3. Improvements in the lot of food crop farmers made a more modest contribution to the fall in the headcount, but nearly comparable contributions to the fall in the P2 index defined relative to the food poverty line. Other sectors make more modest contributions, with trade, manufacturing and government services being the more noticeable (largely due to their size). The worsening poverty of those in households whose head is not working is also evidenced in the table. Population shifts between sectors also help explain some of improvement in poverty, but their contribution is less only around 1-2%. Interaction effects were positive, implying that people moved into sectors where poverty was falling faster (such as cash crop farming).

## 5 Conclusions

After appropriate adjustments, the consumption data from four recent Ugandan surveys provide a picture of rising household welfare during a period of economic recovery and growth. The finding that urban living standards have risen is unsurprising given the many indicators of strong performance of non-agricultural sectors and the visible progress in the major towns. However, it is interesting that rural welfare appears to have risen comparably and seemingly more consistently.

An absolute poverty line can be calculated for Uganda, sufficient to meet calorie needs given the typical diet of the Ugandan poor and meet minimum non-food requirements. The line implies that 56% of Ugandans were poor in the IHS, falling to 46% in the MS-3. These relatively high figures illustrate the low base from which Uganda's recovery has started. For the purposes of comparing poverty trends over time, however, the result of falling poverty is robust to whatever poverty line is chosen. The fall in poverty is substantial, given the relatively short interval of four years. It is explained almost exclusively by growth and not by changes in the distribution of welfare. Nonetheless, growth and poverty reduction have been uneven across economic sectors, with those engaged in cash crop farming, manufacturing and trade faring particularly well.

Although the data generally imply improvements in the welfare of Ugandans, a number of less favourable trends were identified. The Northern region, initially the poorest region, has also seen the smallest improvement over the period. The poorest 20% in rural and urban areas experienced falls in their living standards during the course of the three monitoring surveys. Finally, poverty has worsened during the four surveys for those in households where the head was not working.

**References**


Appleton, S. (1996) "Problems of measuring changes in poverty over time: the case of Uganda 1989-1992", *Institute of Development Studies Bulletin*, 27(1): 43-55

Datt, G. and M.Ravallion (1992) "Growth and redistribution components of changes in poverty measures: a decomposition with application to Brazil and India in the 1980s" *Journal of Development Economics* 38:275-295

Dercon, Stefan and Pramila Krishnan (1998), "Changes in poverty in rural Ethiopia 1989-1995: measurement, robustness tests and decomposition", *Centre for the Study of African Economies Working Paper*, University of Oxford: Oxford.

Foster, J., Greer, J. and Thorbecke, E. (1984) "A Class of Decomposable Poverty Measures", *Econometrica*, 52: 761-6.

Grootaert, Christian and Ravi Kanbur, (1994), "A New Regional Price Index for Côte d'Ivoire using data from the International Comparisons Project", *Journal of African Economies*, Vol.3 No.1: 114-141.

Hanmer, Lucia, Graham Pyatt and Howard White (1996), "Poverty in sub-Saharan Africa: What can we learn from the World Bank's Poverty Assessments?", mimeo, Institute of Social Studies: The Hague.

Kakwani, N., "Statistical inference in the measurement of poverty", *Review of Economics and Statistics*, 75( 4):632-639.

Kayiso, P.K. (1993), "Final report on conversion factors and regional price indices", mimeo, MFEP and PAPSCA: Kampala.

Kikafund, Joyce, Louise Serunjogi and Michael Migadde (1992), "Final report on establishment of a nutrition based absolute poverty line for Uganda", mimeo, MFEP and PAPSCA: Kampala.

Lanjouw, P. and M. Ravallion, "Poverty and household size", *Economic Journal*, Vol. 105, No. 433, (1995), pp.1415-1434.

Lipton, Michael (1983), "Poverty, undernutrition and hunger", *World Bank Staff Working Paper* No.597, World Bank: Washington DC.

Lipton, Michael and Martin Ravallion (1995), "Poverty and Policy", Chapter 41 of J.Behrman and T.N.Srinivasan (eds.) *The Handbook of Development Economics*, Vol.III, pp.2551-2657, Elseiver: Amsterdam

Ravallion, Martin and Benu Bidani (1994) "How robust is a poverty line?" *World Bank Economic Review* 8(1): 75-102.

Ravallion, Martin and Monica Huppi (1991), "Measuring changes in poverty: a methodological case study of Indonesia during an adjustment period", *World Bank Economic Review* 5(1): 57-82

Republic of Uganda (1994), “Background to the Budget 1994-1995", Ministry of Finance and Economic Planning: Kampala.

Republic of Uganda (1996), “Background to the Budget 1995-1996", Ministry of Finance and Economic Planning: Kampala.

Republic of Uganda (1997a), “Poverty trends in Uganda, 1989-1995", Discussion Paper 1, Coordination of Poverty Eradication Project and Statistics Department, Ministry of Finance and Economic Planning, Kampala.

Republic of Uganda (1997b), “Background to the Budget 1997-1998", Ministry of Planning and Economic Development: Kampala.

Sukhatme, P. (1981) *Relationship between malnutrition and poverty* Indian Association of Social Science Institutions: Delhi.

UNICEF/ACFODE (1988), *Uganda - Women's Needs Assessment Survey*, Kampala: UNICEF.

World Bank (1994), *World Development Report*, Washington DC: World Bank.

World Bank (1995), “The social impact of adjustment operations: an overview” Report 14381. Operations Evaluations Department: Washington DC

West, Clive (1987), "Food composition table", mimeo, Department of Human Nutrition, Wageningen Agricultural University: De Drejien

WHO (1985), "Energy and protein requirements", *WHO Technical Report Series 724*, WHO : Geneva

World Bank (1996), *Uganda: the challenge of growth and poverty reduction*, World Bank: Washington D.C.

**Table 1: Adjusted comparison of mean consumption per capita (Ush. Per month)**

a) Total:

| | I H S | MS-1 | MS-2 | MS-3 |
|---|---|---|---|---|
| As calculated in official reports | 11574 | 13195 | 15221 | 17499 |
| 1. excluding Kitgum | 11688 | 13280 | 15221 | 17499 |
| 2. adjusting for public transport fares | 11876 | 13280 | 15221 | 17499 |
| 3. revaluing home consumed food at market prices | 12657 | 14504 | 16454 | 18336 |
| 4. adjusting for regional prices | 13108 | 15060 | 16927 | 18814 |
| 5. adjusting for inflation (1989 prices) | 5415 | 5775 | 6032 | 6176 |
| 6. adjusting for seasonality | 5438 | 5902 | 6096 | 6353 |
| 7. reweighting MS-1 | 5438 | 5833 | 6096 | 6353 |

b) Rural

| | I H S | MS-1 | MS-2 | MS-3 |
|---|---|---|---|---|
| As calculated in official reports | 9547 | 10116 | 12470 | 14303 |
| 1. excluding Kitgum | 9639 | 10152 | 12470 | 14303 |
| 2. adjusting for public transport fares | 9748 | 10152 | 12470 | 14303 |
| 3. revaluing home consumed food at market prices | 10586 | 11464 | 13774 | 15208 |
| 4. adjusting for regional prices | 11376 | 12364 | 14595 | 16020 |
| 5. adjusting for inflation | 4688 | 4773 | 5196 | 5252 |
| 6. adjusting for seasonality | 4718 | 4850 | 5276 | 5449 |
| 7. reweighting MS-1 | 4718 | 4966 | 5276 | 5449 |

c) Urban

| | I H S | MS-1 | MS-2 | MS-3 |
|---|---|---|---|---|
| As calculated in official reports | 25869 | 34092 | 34334 | 37194 |
| 1. excluding Kitgum | 26012 | 34303 | 34334 | 37194 |
| 2. adjusting for public transport fares | 26755 | 34303 | 34334 | 37194 |
| 3. revaluing home consumed food at market prices | 27134 | 34942 | 35074 | 37617 |
| 4. adjusting for regional prices | 25220 | 33185 | 33130 | 36033 |
| 5. adjusting for inflation | 10502 | 12773 | 11844 | 11871 |
| 6. adjusting for seasonality | 10470 | 12976 | 11793 | 11924 |
| 7. reweighting MS-1 | 10470 | 11709 | 11793 | 11924 |

**Table 2: Shares of total consumption (percentages)**

| | IHS | MS-1 | MS-2 | MS-3 |
|---|---|---|---|---|
| Food | 58.59 | 56.62 | 54.67 | 52.69 |
| Beverages & tobacco | 3.12 | 4.12 | 4.46 | 3.68 |
| Restaurants | 1.44 | 2.52 | 2.17 | 2.00 |
| Clothing & footwear | 4.52 | 4.43 | 4.01 | 5.09 |
| Other goods | 7.01 | 5.02 | 5.69 | 6.56 |
| Rent, fuel & power | 12.71 | 14.59 | 14.97 | 14.57 |
| Transport & comm. | 0.72 | 2.68 | 2.99 | 3.64 |
| Health | 4.17 | 3.36 | 4.24 | 3.25 |
| Education | 5.27 | 5.45 | 5.14 | 6.19 |
| Other services | 2.44 | 1.21 | 1.67 | 3.25 |

**Table 3: index of value of home consumption at market prices to value at farm gate prices**

| | IHS | MS-1 | MS-2 | MS-3 |
|---|---|---|---|---|
| national | 123 | 135 | 137 | 121 |
| central, rural | 123 | 163 | 138 | 123 |
| central, urban | 131 | 138 | 139 | 128 |
| east, rural | 124 | 120 | 142 | 123 |
| east, urban | 141 | 130 | 142 | 119 |
| west, rural | 118 | 118 | 131 | 120 |
| west, urban | 122 | 135 | 136 | 120 |
| north, rural | 125 | 143 | 137 | 114 |
| north, urban | 145 | 135 | 136 | 116 |

**Table 4: Regional food price indices**

| | IHS | MS-1 | MS-2 | MS-3 |
|---|---|---|---|---|
| national | 100 | 100 | 100 | 100 |
| central, rural | 103 | 114 | 107 | 112 |
| central, urban | 128 | 123 | 125 | 125 |
| east, rural | 88 | 81 | 89 | 91 |
| east, urban | 114 | 100 | 104 | 97 |
| west, rural | 87 | 78 | 82 | 86 |
| west, urban | 97 | 85 | 91 | 96 |
| north, rural | 80 | 79 | 81 | 76 |
| north, urban | 92 | 88 | 88 | 84 |

**Table 5: Regression of log of constant price expenditure per capita on dummy variables for region, month and survey**

| Variable | Coefficient | T-ratio |
|---|---|---|
| Intercept | 8.157 | 427.35 |
| Central rural | 0.410 | 21.79 |
| Central, urban | 1.000 | 51.88 |
| Eastern, rural | 0.148 | 7.70 |
| Eastern, urban | 0.666 | 31.20 |
| Western, rural | 0.244 | 12.83 |
| Western, urban | 0.826 | 39.38 |
| Northern, urban | 0.498 | 21.37 |
| February | -0.071 | -4.30 |
| March | -0.032 | -1.45 |
| April | 0.0522 | 1.87 |
| May | 0.045 | 2.05 |
| June | 0.060 | 2.61 |
| July | 0.083 | 3.16 |
| August | -0.015 | -0.63 |
| September | -0.039 | -2.04 |
| October | -0.043 | -1.69 |
| November | 0.002 | 0.10 |
| December | 0.038 | 1.79 |
| Data from MS-1 | 0.1492 | 6.67 |
| Data from MS-2 | 0.101 | 7.46 |
| Data from MS-3 | 0.181 | 13.60 |
| | | |
| R-squared: | 0.203 | |
| Number of observations | 21342 | |

**Table 6: Population and mean expenditures per capita in MS-1 and MS-2, with and without weighting**

| | Urban Population | Mean PCE | Rural Population | Mean PCE | Total Population | Mean PCE |
|---|---|---|---|---|---|---|
| MS-1 weighted | 2.26m | 12976 | 15.22m | 4850 | 17.48m | 5902 |
| Old households | 7548 | 8895 | 15387 | 5191 | 22935 | 6410 |
| Old EAs new households | 0.25m | 9520 | 0.46m | 5018 | 0.71m | 6609 |
| New EAs | 2.01m | 13420 | 14.75m | 4945 | 16.75m | 5872 |
| MS-1 unweighted | 10796 | 9589 | 12029 | 4983 | 22825 | 7162 |
| Old households | 2803 | 8721 | 2994 | 5266 | 5797 | 6937 |
| Old EAs old households | 3078 | 9985 | 3032 | 5043 | 6110 | 7533 |
| New EAs | 4915 | 9835 | 6003 | 4812 | 10918 | 7073 |
| MS-1 reweighted | 2.25m | 11709 | 15.26m | 4966 | 17.51m | 5833 |
| Old households | 0.55m | 9423 | 3.84m | 5245 | 4.39m | 5769 |
| Old EAs new households | 0.63m | 10806 | 3.87m | 4927 | 4.50m | 5753 |
| New EAs | 1.07m | 13420 | 7.56m | 4845 | 8.63m | 5907 |
| MS-2 weighted | 2.23m | 11793 | 15.52m | 5276 | 17.75 | 6096 |
| Old households | 0.48m | 10313 | 3.89m | 5458 | 4.37 | 5992 |
| Old EAs new households | 0.67m | 10878 | 3.95m | 5175 | 4.62 | 5999 |
| New EAs | 1.09m | 13012 | 7.68m | 5237 | 8.76 | 6200 |
| MS-2 unweighted | 11289 | 9569 | 11905 | 5175 | 23194 | 7314 |
| Old households | 2674 | 9156 | 3033 | 5357 | 5707 | 7137 |
| Old EAs new households | 3089 | 9485 | 3028 | 5140 | 6117 | 7334 |
| New EAs | 5526 | 9817 | 5844 | 5099 | 11370 | 7392 |

PCE = per capita expenditure (1989 Uganda shillings per month, adjusted according to rows 1-6 of Table 1)

**Table 7: National accounts estimates of private consumption per capita**

| Fiscal Year | Nominal (sh/month) | Real (1989 prices) | % Growth |
|---|---|---|---|
| 1989/90 | 6599 | 5955 | 3.19 |
| 1990/91 | 8447 | 6158 | 3.40 |
| 1991/92 | 12156 | 6238 | 1.30 |
| 1992/93 | 16407 | 6478 | 3.86 |
| 1993/94 | 17272 | 6401 | -1.19 |
| 1994/95 | 20124 | 7029 | 9.81 |
| 1995/96 | 22526 | 7320 | 4.14 |

Notes:
Data is in fiscal years (1st July to 30th June).
Real consumption is obtained using the CPI as a deflator.
Source: national accounts data are unpublished figures supplied by the Statistics Department, Ugandan Ministry of Economic Planning

**Table 8: Equivalence scales and daily calorific requirements**

| Age | Male | Female | Equivalence scale |
|---|---|---|---|
| 1 | 820 | 820 | 0.273 |
| 1-2 | 1150 | 1150 | 0.383 |
| 2-3 | 1350 | 1350 | 0.450 |
| 3-5 | 1550 | 1550 | 0.517 |
| 5-7 | 1850 | 1750 | 0.617 |
| 7-10 | 2100 | 1800 | 0.700 |
| 10-12 | 2200 | 1950 | 0.733 |
| 12-14 | 2400 | 2100 | 0.800 |
| 14-16 | 2650 | 2150 | 0.883 |
| 16-18 | 2850 | 2150 | 0.950 |

| | Type of work | | | | | | |
|---|---|---|---|---|---|---|---|
| | Light | Medium | Heavy | Light | Medium | Heavy | |
| 18-30 | 2600 | 3000 | 3550 | 2000 | 2100 | 2350 | 1 |
| 30-60 | 2500 | 2900 | 3400 | 2050 | 2150 | 2400 | 0.977 |
| >60 | 2100 | 2450 | 2850 | 1850 | 1950 | 2150 | 0.845 |
| | | | | +285 if pregnant (last 3 months) | | | |
| | | | | +500 if breast-feeding (first 6 months) | | | |

Source: WHO (1985)
Note: equivalence scales are gained by dividing male calorific requirements by 2900

**Table 9: Derivation of the food poverty line (MS-1 prices)**

| Food item | 1. Quantity (kg per month) | 2. Price (Ush/kg) | 3. Calories/kg | 4. Retention | 5. Calories per day | 6. Cost per month (Ush 1993 prices) |
|---|---|---|---|---|---|---|
| matooke | 28.54 | 67 | 770 | 0.50 | 366 | 1903 |
| sweet potatoes | 34.12 | 63 | 1020 | 0.70 | 812 | 2133 |
| cassava | 9.02 | 200 | 2557 | 0.89 | 684 | 1804 |
| Irish potatoes | 0.36 | 250 | 750 | 0.85 | 8 | 89 |
| rice | 0.06 | 700 | 3600 | 1.00 | 7 | 42 |
| maize (grain) | 0.30 | 400 | 3470 | 0.90 | 32 | 121 |
| maize (flour) | 1.54 | 350 | 3540 | 1.00 | 181 | 538 |
| bread | 0.02 | 1300 | 2490 | 1.00 | 1 | 20 |
| millet | 2.25 | 300 | 3231 | 0.65 | 158 | 676 |
| sorghum | 1.57 | 200 | 3450 | 0.90 | 163 | 314 |
| beef | 0.31 | 1100 | 2340 | 0.80 | 19 | 339 |
| other meat | 0.05 | 1000 | 2340 | 0.75 | 3 | 52 |
| chicken | 0.09 | 1167 | 1460 | 0.61 | 3 | 111 |
| fresh fish | 0.62 | 467 | 1030 | 0.60 | 13 | 290 |
| smoked fish | 0.39 | 583 | 3005 | 0.70 | 28 | 229 |
| eggs | 0.00 | 2000 | 1490 | 0.88 | 0 | 8 |
| milk | 0.55 | 400 | 640 | 1.00 | 12 | 219 |
| cooking oil/ghee | 0.06 | 1400 | 8570 | 1.00 | 18 | 89 |
| passion fruits | 0.10 | 382 | 920 | 0.75 | 2 | 37 |
| sweet bananas | 2.34 | 50 | 1160 | 0.56 | 51 | 117 |
| onions | 0.18 | 323 | 480 | 0.80 | 2 | 57 |
| tomatoes | 0.70 | 192 | 200 | 0.95 | 4 | 134 |
| cabbages | 0.33 | 125 | 230 | 0.78 | 2 | 41 |
| beans (fresh) | 0.73 | 400 | 1040 | 0.75 | 19 | 292 |
| beans (dry) | 2.86 | 350 | 3300 | 0.75 | 236 | 1002 |
| groundnuts | 0.59 | 600 | 2350 | 0.93 | 43 | 355 |
| sim-sim | 0.45 | 222 | 5930 | 1.00 | 89 | 100 |
| sugar | 0.35 | 1000 | 3750 | 1.00 | 44 | 352 |
| TOTAL | | | | | 3000 | 11463 |

**Table 10: Regression of food share**

| Variables | Coefficients | T-ratio |
|---|---|---|
| Constant | 0.550 | 60.55 |
| log consumption per capita divided by food poverty line | 0.060 | 11.89 |
| square of log consumption pc divided by food poverty line | -0.053 | -19.84 |
| central rural | -0.119 | -15.26 |
| eastern urban | 0.044 | 5.48 |
| eastern rural | -0.052 | -6.46 |
| western urban | 0.066 | 8.44 |
| western rural | -0.020 | -2.50 |
| northern urban | 0.029 | 3.52 |
| northern rural | -0.031 | -3.65 |
| household size | 0.008 | 1.54 |
| women-headed household | 0.006 | 1.05 |
| The following variables are as proportions of household size: | | |
| boys aged <6 years | 0.071 | 3.99 |
| girls aged <6 years | 0.089 | 4.81 |
| boys aged 6-12 years | 0.052 | 2.62 |
| girls aged 6-12 years | 0.047 | 2.34 |
| boys aged 13-17 years | 0.041 | 1.92 |
| girls aged 13-17 years | 0.022 | 1.00 |
| women aged 18-59 | 0.056 | 4.41 |
| men aged 60+ | 0.082 | 5.33 |
| women aged 60+ | 0.075 | 4.32 |
| Number of observations: | 4962 | |
| Adjusted R-squared | 0.255 | |
| Mean of dependent variable | 0.586 | |

**Table 11: Poverty lines in Uganda (1993 prices)**

| region | 1. predicted food share | 2. poverty line (national prices) | 3. Food poverty line (nominal) | 4. Poverty line (nominal) |
|---|---|---|---|---|
| Central rural | 0.609 | 15947 | 13971 | 19435 |
| Central urban | 0.49 | 17314 | 14837 | 22409 |
| Eastern rural | 0.653 | 15446 | 8832 | 11900 |
| Eastern urban | 0.557 | 16548 | 11300 | 16312 |
| Western rural | 0.675 | 15189 | 8209 | 10877 |
| Western urban | 0.589 | 16174 | 9245 | 13043 |
| Northern rural | 0.638 | 15610 | 8410 | 11452 |
| Northern urban | 0.578 | 16304 | 9433 | 13417 |
| National (average) | 0.566 | 16443 | 11463 | 16443 |

**Table 12.1.1: Poverty in the IHS (relative to total poverty line)**

| | Pop. Share | Mean CPAE | P0 | P1 | P2 | Contribution to P0 | P1 | P2 |
|---|---|---|---|---|---|---|---|---|
| national | 100 | 7091 | 55.6 | 20.3 | 9.92 | 100 | 100 | 100 |
| rural | 87.5 | 6183 | 59.4 | 22.0 | 10.81 | 93.4 | 94.7 | 95.4 |
| urban | 12.5 | 13444 | 29.4 | 8.7 | 3.67 | 6.6 | 5.3 | 4.6 |
| central | 29.2 | 9430 | 44.7 | 15.2 | 7.00 | 23.4 | 21.8 | 20.6 |
| east | 26.6 | 6188 | 59.5 | 22.1 | 10.88 | 28.4 | 29.0 | 29.2 |
| west | 25.6 | 6515 | 52.5 | 18.6 | 8.98 | 24.2 | 23.5 | 23.2 |
| north | 18.6 | 5511 | 71.4 | 28.1 | 14.39 | 23.9 | 25.8 | 27.0 |
| central rural | 21.6 | 7051 | 52.9 | 18.4 | 8.67 | 20.5 | 19.6 | 18.9 |
| central urban | 7.6 | 16197 | 21.2 | 5.9 | 2.23 | 2.9 | 2.2 | 1.7 |
| east rural | 24.2 | 5914 | 61.2 | 23.1 | 11.44 | 26.6 | 27.5 | 27.9 |
| east urban | 2.4 | 8958 | 42.6 | 12.4 | 5.32 | 1.8 | 1.5 | 1.3 |
| west rural | 24.2 | 6280 | 53.6 | 19.1 | 9.27 | 23.3 | 22.8 | 22.6 |
| west urban | 1.4 | 10529 | 34.4 | 9.4 | 3.97 | 0.9 | 0.7 | 0.6 |
| north rural | 17.5 | 5348 | 72.7 | 28.7 | 14.69 | 22.9 | 24.8 | 26.0 |
| north urban | 1.1 | 8066 | 49.7 | 18.6 | 9.59 | 1.0 | 1.0 | 1.1 |

**Table 12.1.2: Poverty rates relative to the food poverty line (only) in the IHS**

| | Pop. Share | Mean CPAE | P0 | P1 | P2 | Contribution to P0 | P1 | P2 |
|---|---|---|---|---|---|---|---|---|
| national | 100 | 7091 | 35.3 | 11.1 | 4.85 | 100 | 100 | 100 |
| rural | 87.5 | 6183 | 38.6 | 12.2 | 5.37 | 95.6 | 96.5 | 96.8 |
| urban | 12.5 | 13444 | 12.5 | 3.1 | 1.22 | 4.4 | 3.5 | 3.2 |
| central | 29.2 | 9430 | 24.8 | 7.1 | 2.90 | 20.5 | 18.6 | 17.5 |
| east | 26.6 | 6188 | 38.9 | 12.4 | 5.40 | 29.3 | 29.8 | 29.6 |
| west | 25.6 | 6515 | 33.6 | 10.6 | 4.62 | 24.4 | 24.5 | 24.4 |
| north | 18.6 | 5511 | 49.0 | 16.1 | 7.42 | 25.9 | 27.1 | 28.5 |
| central rural | 21.6 | 7051 | 30.9 | 9.1 | 3.76 | 18.9 | 17.7 | 16.7 |
| central urban | 7.6 | 16197 | 7.3 | 1.4 | 0.48 | 1.6 | 0.9 | 0.7 |
| east rural | 24.2 | 5914 | 40.8 | 13.2 | 5.76 | 27.9 | 28.7 | 28.7 |
| east urban | 2.4 | 8958 | 20.6 | 4.9 | 1.76 | 1.4 | 1.1 | 0.9 |
| west rural | 24.2 | 6280 | 34.8 | 11.0 | 4.80 | 23.8 | 24.0 | 24.0 |
| west urban | 1.4 | 10529 | 13.3 | 3.6 | 1.59 | 0.5 | 0.5 | 0.5 |
| north rural | 17.5 | 5348 | 50.3 | 16.5 | 7.60 | 24.9 | 26.1 | 27.4 |
| north urban | 1.1 | 8066 | 29.3 | 9.9 | 4.64 | 0.9 | 1.0 | 1.1 |

CPAE = consumption per adult per equivalent (1989 shillings per month)

**Table 12.2.1: Poverty in the MS-1 (relative to total poverty line)**

| | Pop. Share | Mean CPAE | P0 | P1 | P2 | Contribution to P0 | P1 | P2 |
|---|---|---|---|---|---|---|---|---|
| national | 100 | 7575 | 50.3 | 16.4 | 7.25 | 100 | 100 | 100 |
| rural | 87.1 | 6504 | 54.8 | 18.1 | 8.04 | 95.0 | 95.9 | 96.6 |
| urban | 12.9 | 14834 | 19.6 | 5.2 | 1.92 | 5.0 | 4.1 | 3.4 |
| central | 30.1 | 10508 | 33.4 | 9.9 | 4.05 | 20.0 | 18.2 | 16.8 |
| east | 25.4 | 6294 | 55.6 | 18.7 | 8.59 | 28.1 | 29.0 | 30.1 |
| west | 27.9 | 6667 | 54.3 | 17.1 | 7.27 | 30.1 | 29.1 | 28.0 |
| north | 16.6 | 5740 | 66.1 | 23.4 | 11.00 | 21.8 | 23.7 | 25.1 |
| central rural | 22.1 | 7993 | 40.6 | 12.4 | 5.14 | 17.9 | 16.7 | 15.7 |
| central urban | 8.0 | 17500 | 13.1 | 3.1 | 1.03 | 2.1 | 1.5 | 1.1 |
| east rural | 23.5 | 5955 | 57.9 | 19.7 | 9.07 | 27.0 | 28.1 | 29.4 |
| east urban | 1.9 | 10431 | 28.0 | 7.2 | 2.68 | 1.1 | 0.8 | 0.7 |
| west rural | 26.5 | 6386 | 56.1 | 17.7 | 7.55 | 29.5 | 28.6 | 27.5 |
| west urban | 1.4 | 11804 | 22.5 | 6.2 | 2.19 | 0.6 | 0.5 | 0.4 |
| north rural | 15.1 | 5380 | 68.7 | 24.5 | 11.56 | 20.6 | 22.5 | 24.0 |
| north urban | 1.5 | 9319 | 40.5 | 12.8 | 5.42 | 1.2 | 1.2 | 1.1 |

**Table 12.2.2: Poverty rates relative to the food poverty line (only) in the MS-1**

| | Pop. Share | Mean CPAE | P0 | P1 | P2 | Contribution to P0 | P1 | P2 |
|---|---|---|---|---|---|---|---|---|
| national | 100 | 7575 | 29.6 | 7.9 | 3.06 | 100 | 100 | 100 |
| rural | 87.1 | 6504 | 32.9 | 8.9 | 3.45 | 97.0 | 97.7 | 98.2 |
| urban | 12.9 | 14834 | 7.0 | 1.4 | 0.43 | 3.0 | 2.3 | 1.8 |
| central | 30.1 | 10508 | 15.3 | 3.8 | 1.38 | 15.6 | 14.4 | 13.5 |
| east | 25.4 | 6294 | 33.9 | 9.6 | 3.90 | 29.2 | 30.8 | 32.4 |
| west | 27.9 | 6667 | 33.9 | 8.3 | 3.03 | 32.1 | 29.4 | 27.6 |
| north | 16.6 | 5740 | 41.4 | 12.2 | 4.91 | 23.2 | 25.4 | 26.6 |
| central rural | 22.1 | 7993 | 19.9 | 5.0 | 1.82 | 14.9 | 13.9 | 13.1 |
| central urban | 8.0 | 17500 | 2.4 | 0.5 | 0.14 | 0.6 | 0.5 | 0.4 |
| east rural | 23.5 | 5955 | 35.8 | 10.2 | 4.17 | 28.5 | 30.3 | 32.0 |
| east urban | 1.9 | 10431 | 10.7 | 2.1 | 0.63 | 0.7 | 0.5 | 0.4 |
| west rural | 26.5 | 6386 | 35.2 | 8.7 | 3.17 | 31.5 | 29.0 | 27.4 |
| west urban | 1.4 | 11804 | 10.5 | 1.7 | 0.41 | 0.5 | 0.3 | 0.2 |
| north rural | 15.1 | 5380 | 43.2 | 12.9 | 5.23 | 22.0 | 24.5 | 25.7 |
| north urban | 1.5 | 9319 | 23.3 | 5.0 | 1.73 | 1.2 | 01.0 | 0.9 |

**Table 12.3.1: Poverty rates in the MS-2 (relative to total poverty line)**

| | Pop. Share | Mean CPAE | P0 | P1 | P2 | Contribution to P0 | P1 | P2 |
|---|---|---|---|---|---|---|---|---|
| national | 100 | 7906 | 49.2 | 15.8 | 6.98 | 100 | 100 | 100 |
| rural | 87.4 | 6908 | 53.3 | 17.2 | 7.59 | 94.6 | 94.9 | 95.1 |
| urban | 12.6 | 14840 | 21.0 | 6.5 | 2.72 | 5.4 | 5.1 | 4.9 |
| central | 30.4 | 11533 | 29.7 | 8.3 | 3.40 | 18.3 | 16.0 | 14.8 |
| east | 27.2 | 5851 | 64.2 | 22.7 | 10.63 | 35.5 | 39.0 | 41.4 |
| west | 26.5 | 7068 | 48.1 | 14.6 | 6.18 | 25.9 | 24.5 | 23.4 |
| north | 16.0 | 5892 | 62.6 | 20.3 | 8.93 | 20.3 | 20.5 | 20.4 |
| central rural | 22.7 | 9435 | 35.7 | 9.8 | 4.00 | 16.5 | 14.1 | 13.0 |
| central urban | 7.7 | 17686 | 11.9 | 3.9 | 1.62 | 1.9 | 1.9 | 1.8 |
| east rural | 25.1 | 5532 | 66.2 | 23.7 | 11.15 | 33.8 | 37.6 | 40.1 |
| east urban | 2.1 | 9698 | 39.7 | 10.6 | 4.35 | 1.7 | 1.4 | 1.3 |
| west rural | 24.9 | 6737 | 49.6 | 15.1 | 6.39 | 25.1 | 23.8 | 22.8 |
| west urban | 1.6 | 12264 | 25.2 | 7.1 | 2.84 | 0.8 | 0.7 | 0.6 |
| north rural | 14.8 | 5656 | 64.3 | 20.8 | 9.09 | 19.3 | 19.4 | 19.2 |
| north urban | 1.2 | 8810 | 41.7 | 14.7 | 6.90 | 1.0 | 1.1 | 1.2 |

**Table 12.3.2: Poverty rates relative to food poverty line (only) in the MS-2**

| | Pop. Share | Mean CPAE | P0 | P1 | P2 | Contribution to P0 | P1 | P2 |
|---|---|---|---|---|---|---|---|---|
| national | 100 | 7906 | 27.8 | 7.6 | 2.97 | 100 | 100 | 100 |
| rural | 87.4 | 6908 | 30.4 | 8.3 | 3.27 | 95.8 | 96.2 | 96.4 |
| urban | 12.6 | 14840 | 9.3 | 2.3 | 0.83 | 4.2 | 3.8 | 3.6 |
| central | 30.4 | 11533 | 12.9 | 3.2 | 1.15 | 14.1 | 12.7 | 11.7 |
| east | 27.2 | 5851 | 41.1 | 12.0 | 4.94 | 40.2 | 43.0 | 45.3 |
| west | 26.5 | 7068 | 27.3 | 7.0 | 2.62 | 26.0 | 24.4 | 23.4 |
| north | 16.0 | 5892 | 34.2 | 9.5 | 3.63 | 19.6 | 19.9 | 19.6 |
| central rural | 22.7 | 9435 | 15.5 | 3.9 | 1.41 | 12.6 | 11.6 | 10.8 |
| central urban | 7.7 | 17686 | 5.3 | 1.2 | 0.37 | 1.5 | 1.2 | 1.0 |
| east rural | 25.1 | 5532 | 43.4 | 12.7 | 5.23 | 39.2 | 42.0 | 44.3 |
| east urban | 2.1 | 9698 | 13.6 | 3.6 | 1.53 | 1.0 | 1.0 | 1.1 |
| west rural | 24.9 | 6737 | 28.3 | 7.3 | 2.73 | 25.3 | 23.8 | 22.9 |
| west urban | 1.6 | 12264 | 12.2 | 2.5 | 0.82 | 0.7 | 0.5 | 0.4 |
| north rural | 14.8 | 5656 | 35.0 | 9.7 | 3.70 | 18.6 | 18.8 | 18.4 |
| north urban | 1.2 | 8810 | 24.0 | 6.8 | 2.77 | 1.0 | 1.0 | 1.1 |

**Table 12.4.1: Poverty rates in the MS-3 (relative to the total poverty line)**

| | Pop. Share | Mean CPAE | P0 | P1 | P2 | Contribution to P0 | P1 | P2 |
|---|---|---|---|---|---|---|---|---|
| national | 100 | 8310 | 45.6 | 15.1 | 6.96 | 100 | 100 | 100 |
| rural | 86.0 | 7211 | 49.7 | 16.6 | 7.73 | 93.9 | 94.9 | 95.6 |
| urban | 14.0 | 15086 | 20.0 | 5.5 | 2.21 | 6.1 | 5.1 | 4.4 |
| central | 27.1 | 11602 | 28.0 | 7.2 | 2.76 | 16.6 | 12.9 | 10.7 |
| east | 28.9 | 6957 | 53.3 | 19.7 | 9.85 | 33.8 | 37.7 | 40.9 |
| west | 26.7 | 7950 | 42.3 | 12.8 | 5.52 | 24.7 | 22.7 | 21.2 |
| north | 17.4 | 5988 | 65.1 | 23.1 | 10.89 | 24.8 | 26.7 | 27.2 |
| central rural | 18.6 | 9053 | 34.4 | 8.9 | 3.45 | 14.1 | 11.0 | 9.2 |
| central urban | 8.4 | 17238 | 13.6 | 3.3 | 1.24 | 2.5 | 1.9 | 1.5 |
| east rural | 26.9 | 6504 | 55.0 | 20.5 | 10.33 | 32.5 | 36.6 | 40.0 |
| east urban | 2.0 | 13132 | 30.3 | 8.4 | 3.35 | 1.3 | 1.1 | 1.0 |
| west rural | 25.0 | 7547 | 44.1 | 13.5 | 5.80 | 24.2 | 22.3 | 20.8 |
| west urban | 1.6 | 14067 | 13.9 | 3.6 | 1.35 | 0.5 | 0.4 | 0.3 |
| north rural | 15.5 | 5680 | 67.9 | 24.3 | 11.48 | 23.0 | 24.9 | 25.5 |
| north urban | 1.9 | 8488 | 42.8 | 13.8 | 6.07 | 1.8 | 1.7 | 1.7 |

**Table 12.4.2: Poverty rates relative to the food poverty line (only) in the MS-3**

| | Pop. Share | Mean CPAE | P0 | P1 | P2 | Contribution to P0 | P1 | P2 |
|---|---|---|---|---|---|---|---|---|
| national | 100 | 8310 | 26.2 | 7.6 | 3.23 | 100 | 100 | 100 |
| rural | 86.0 | 7211 | 29.2 | 8.6 | 3.65 | 95.8 | 96.8 | 97.1 |
| urban | 14.0 | 15086 | 7.9 | 1.8 | 0.68 | 4.2 | 3.2 | 2.9 |
| central | 27.1 | 11602 | 10.7 | 2.5 | 0.87 | 11.0 | 8.8 | 7.2 |
| east | 28.9 | 6957 | 35.3 | 11.2 | 5.13 | 39.0 | 42.3 | 45.8 |
| west | 26.7 | 7950 | 22.9 | 6.3 | 2.45 | 23.3 | 22.0 | 20.2 |
| north | 17.4 | 5988 | 40.4 | 11.9 | 4.97 | 26.8 | 27.0 | 26.7 |
| central rural | 18.6 | 9053 | 13.7 | 3.2 | 1.13 | 9.7 | 7.9 | 6.5 |
| central urban | 8.4 | 17238 | 4.0 | 0.8 | 0.28 | 1.3 | 0.9 | 0.7 |
| east rural | 26.9 | 6504 | 37.1 | 11.8 | 5.42 | 38.1 | 41.6 | 45.1 |
| east urban | 2.0 | 13132 | 11.7 | 2.6 | 1.11 | 0.9 | 0.7 | 0.7 |
| west rural | 25.0 | 7547 | 23.9 | 6.6 | 2.59 | 22.8 | 21.7 | 20.1 |
| west urban | 1.6 | 14067 | 6.9 | 1.1 | 0.33 | 0.4 | 0.2 | 0.2 |
| north rural | 15.5 | 5680 | 42.6 | 12.6 | 5.30 | 25.5 | 25.5 | 25.3 |
| north urban | 1.9 | 8488 | 22.2 | 5.7 | 2.30 | 1.6 | 1.4 | 1.4 |

**Table 13: T-test statistics for hypothesis of equality of poverty statistics in IHS and MS-3**

| | Poverty | | | Poverty relative to food pov. line only | | |
|---|---|---|---|---|---|---|
| | P0 | P1 | P2 | P0 | P1 | P2 |
| national | 11.91 | 13.72 | 12.45 | 11.82 | 11.71 | 9.87 |
| rural | 8.83 | 10.57 | 9.67 | 9.17 | 9.18 | 7.76 |
| urban | 8.25 | 7.80 | 6.48 | 5.76 | 5.24 | 4.05 |
| central | 11.28 | 14.27 | 13.47 | 12.44 | 12.32 | 10.94 |
| east | 3.74 | 3.02 | 1.96 | 2.23 | 1.90 | 0.73 |
| west | 6.31 | 8.29 | 8.23 | 7.41 | 8.13 | 7.34 |
| north | 3.44 | 5.31 | 5.60 | 4.52 | 5.49 | 5.46 |
| central rural | 8.92 | 11.82 | 11.40 | 10.40 | 10.57 | 9.56 |
| central urban | 4.32 | 4.59 | 3.45 | 3.12 | 1.99 | 1.29 |
| east rural | 2.94 | 2.47 | 1.62 | 1.78 | 1.60 | 0.69 |
| east urban | 4.78 | 4.16 | 3.60 | 4.59 | 3.82 | 1.93 |
| west rural | 4.54 | 6.36 | 6.41 | 5.81 | 6.39 | 5.76 |
| west urban | 9.52 | 7.72 | 6.36 | 4.13 | 5.33 | 5.23 |
| north rural | 2.11 | 3.67 | 3.97 | 3.09 | 3.86 | 3.94 |
| north urban | 2.24 | 3.45 | 3.98 | 2.59 | 4.03 | 3.99 |

**Table 14: Mean consumption per adult equivalent by decile (1989 shillings per month)**

**a) National**

| | IHS | MS-1 | MS-2 | MS-3 |
|---|---|---|---|---|
| 1 | 1422 | 1735 | 1748 | 1645 |
| 2 | 2151 | 2532 | 2545 | 2539 |
| 3 | 2704 | 3035 | 3132 | 3219 |
| 4 | 3263 | 3578 | 3671 | 3750 |
| 5 | 3847 | 4131 | 4160 | 4417 |
| 6 | 4475 | 4840 | 4858 | 5115 |
| 7 | 5255 | 5608 | 5645 | 6091 |
| 8 | 6339 | 6828 | 6828 | 7402 |
| 9 | 8152 | 8722 | 8980 | 9696 |
| 10 | 16736 | 17283 | 19365 | 19614 |
| All | 5438 | 5833 | 6096 | 6353 |

**b) Rural**

| | IHS | MS-1 | MS-2 | MS-3 |
|---|---|---|---|---|
| 1 | 1381 | 1683 | 1703 | 1578 |
| 2 | 2072 | 2433 | 2450 | 2419 |
| 3 | 2573 | 2872 | 2990 | 3045 |
| 4 | 3095 | 3382 | 3525 | 3592 |
| 5 | 3606 | 3894 | 3988 | 4112 |
| 6 | 4216 | 4520 | 4520 | 4739 |
| 7 | 4929 | 5113 | 5232 | 5504 |
| 8 | 5744 | 6115 | 6209 | 6646 |
| 9 | 7223 | 7515 | 7802 | 8355 |
| 10 | 12325 | 12084 | 14312 | 14482 |
| All | 4718 | 4966 | 5276 | 5449 |

**c) Urban**

| | IHS | MS-1 | MS-2 | MS-3 |
|---|---|---|---|---|
| 1 | 2305 | 2968 | 2602 | 2783 |
| 2 | 3551 | 4233 | 3943 | 4069 |
| 3 | 4410 | 5481 | 5103 | 5428 |
| 4 | 5509 | 6688 | 6084 | 6583 |
| 5 | 6447 | 8236 | 7314 | 8044 |
| 6 | 7894 | 9568 | 9093 | 9437 |
| 7 | 9467 | 11850 | 11649 | 10993 |
| 8 | 11809 | 13761 | 14507 | 13900 |
| 9 | 15564 | 17765 | 19094 | 17969 |
| 10 | 37413 | 36339 | 38038 | 39849 |
| All | 10470 | 11709 | 11793 | 11924 |

**Table 15: Gini coefficients for Uganda**

| | Rural | Urban | National |
|---|---|---|---|
| IHS | 0.334 | 0.435 | 0.380 |
| MS-1 | 0.305 | 0.385 | 0.358 |
| MS-2 | 0.329 | 0.414 | 0.375 |
| MS-3 | 0.338 | 0.400 | 0.379 |

**Table 16: Decomposing the change in poverty into growth and distribution components**

| | Poverty Statistics | | Contribution to change in statistics due to | | |
|---|---|---|---|---|---|
| | IHS | MS-3 | Growth | Distribution | Residual |
| Poverty | | | | | |
| P0 | 0.5561 | 0.4557 | 0.1070 | -0.0044 | -0.0021 |
| P1 | 0.2032 | 0.1507 | 0.0518 | -0.0006 | 0.0013 |
| P2 | 0.0991 | 0.0696 | 0.0294 | 0 | 0 |
| Poverty defined relative to the food poverty line only | | | | | |
| P0 | 0.3532 | 0.2622 | 0.0849 | -0.0001 | 0.0069 |
| P1 | 0.1108 | 0.0764 | 0.0341 | 0.0005 | -0.0002 |
| P2 | 0.0485 | 0.0323 | 0.0170 | -0.0005 | -0.0004 |

**Table 17.1.1: poverty by sector of household head, IHS**

| Sector | Pop. Share | Mean CPAE | P0 | P1 | P2 | Contribution to P0 | P1 | P2 |
|---|---|---|---|---|---|---|---|---|
| national | 100 | 7091 | 55.6 | 20.3 | 9.92 | 100 | 100 | 100 |
| food crop | 47.2 | 5711 | 64.1 | 24.5 | 12.30 | 54.4 | 56.9 | 58.5 |
| cash crop | 23.5 | 6087 | 59.6 | 20.5 | 9.63 | 25.2 | 23.8 | 22.8 |
| non-crop agriculture | 2.6 | 6947 | 51.7 | 21.2 | 10.62 | 2.4 | 2.7 | 2.8 |
| mining | 0.1 | 8471 | 43.4 | 8.4 | 3.49 | 0.1 | 0.0 | 0.0 |
| manufacturing | 3.6 | 8211 | 46.3 | 16.0 | 7.65 | 3.0 | 2.9 | 2.8 |
| public utilities | 0.1 | 9203 | 43.3 | 5.7 | 1.72 | 0.1 | 0.0 | 0.0 |
| construction | 1.3 | 11311 | 38.3 | 10.6 | 4.00 | 0.9 | 0.7 | 0.5 |
| trade | 6.7 | 12384 | 26.4 | 7.8 | 3.41 | 3.2 | 2.6 | 2.3 |
| hotels | 0.5 | 9911 | 26.6 | 7.7 | 2.86 | 0.3 | 0.2 | 0.2 |
| transport/com | 1.5 | 10309 | 31.9 | 11.2 | 5.33 | 0.8 | 0.8 | 0.8 |
| misc. services | 1.7 | 13534 | 27.7 | 10.0 | 4.75 | 0.8 | 0.8 | 0.8 |
| gov. services | 6.8 | 11161 | 33.5 | 10.1 | 4.24 | 4.1 | 3.4 | 2.9 |
| not working | 4.3 | 6835 | 59.8 | 24.4 | 12.58 | 4.6 | 5.2 | 5.5 |

**Table 17.1.2: poverty defined relative to the food poverty line (only) by sector of household head, IHS**

| | Pop. Share | Mean CPAE | P0 | P1 | P2 | Contribution to P0 | P1 | P2 |
|---|---|---|---|---|---|---|---|---|
| national | 100 | 7091 | 35.3 | 11.1 | 4.85 | 100 | 100 | 100 |
| food crop | 47.2 | 5711 | 42.8 | 13.9 | 6.28 | 57.2 | 59.4 | 61.1 |
| cash crop | 23.5 | 6087 | 35.9 | 10.7 | 4.42 | 23.9 | 22.6 | 21.5 |
| non-crop agriculture | 2.6 | 6947 | 38.1 | 11.9 | 5.17 | 2.8 | 2.8 | 2.8 |
| mining | 0.1 | 8471 | 9.0 | 3.4 | 1.73 | 0.0 | 0.0 | 0.0 |
| manufacturing | 3.6 | 8211 | 26.7 | 7.8 | 3.62 | 2.7 | 2.5 | 2.7 |
| public utilities | 0.1 | 9203 | 11.0 | 1.8 | 0.29 | 0.0 | 0.0 | 0.0 |
| construction | 1.3 | 11311 | 17.4 | 3.4 | 0.91 | 0.7 | 0.4 | 0.3 |
| trade | 6.7 | 12384 | 12.0 | 3.4 | 1.43 | 2.3 | 2.0 | 2.0 |
| hotels | 0.5 | 9911 | 14.0 | 2.5 | 0.72 | 0.2 | 0.1 | 0.1 |
| transport/comm | 1.5 | 10309 | 19.6 | 6.1 | 2.34 | 0.8 | 0.8 | 0.7 |
| misc. services | 1.7 | 13534 | 17.0 | 5.2 | 2.27 | 0.8 | 0.8 | 0.8 |
| gov. services | 6.8 | 11161 | 16.3 | 4.4 | 1.66 | 3.1 | 2.7 | 2.3 |
| not working | 4.3 | 6835 | 43.4 | 14.5 | 6.49 | 5.3 | 5.7 | 5.8 |

CPAE = consumption per adult equivalent

**Table 17.2.1: Poverty by sector of household head, MS-3**

| | Pop. Share | Mean CPAE | P0 | P1 | P2 | Contribution to P0 | P1 | P2 |
|---|---|---|---|---|---|---|---|---|
| national | 100 | 8313 | 45.6 | 15.1 | 6.96 | 100 | 100 | 100 |
| food crop | 44.1 | 6184 | 58.3 | 20.7 | 9.94 | 56.5 | 60.6 | 63.0 |
| cash crop | 27.1 | 8069 | 40.5 | 10.5 | 4.01 | 24.1 | 18.9 | 15.6 |
| non-crop agriculture | 2.0 | 8773 | 41.0 | 13.4 | 6.38 | 1.8 | 1.8 | 1.8 |
| mining | 0.2 | 6044 | 74.2 | 11.9 | 2.34 | 0.3 | 0.1 | 0.1 |
| manufacturing | 3.4 | 11167 | 27.9 | 8.6 | 3.52 | 2.1 | 1.9 | 1.7 |
| public utilities | 0.1 | 15007 | 10.9 | 0.8 | 0.08 | 0.0 | 0.0 | 0.0 |
| construction | 1.0 | 10083 | 34.6 | 8.3 | 2.91 | 0.8 | 0.6 | 0.4 |
| trade | 6.7 | 14377 | 16.7 | 3.7 | 1.33 | 2.5 | 1.7 | 1.3 |
| hotels | 0.9 | 12036 | 17.0 | 4.4 | 1.33 | 0.4 | 0.3 | 0.2 |
| transport/comm | 1.9 | 15337 | 14.3 | 6.0 | 2.75 | 0.6 | 0.7 | 0.7 |
| misc. services | 2.1 | 11747 | 26.9 | 10.0 | 4.50 | 1.3 | 1.4 | 1.4 |
| gov. services | 5.6 | 12755 | 26.2 | 7.1 | 2.68 | 3.2 | 2.6 | 2.1 |
| not working | 4.8 | 7975 | 62.1 | 29.0 | 16.58 | 6.6 | 9.3 | 11.5 |

**Table 17.2.2: Poverty defined relative to the food poverty line (only), by sector of household head, MS-3**

| | Pop. Share | Mean CPAE | P0 | P1 | P2 | Contribution to P0 | P1 | P2 |
|---|---|---|---|---|---|---|---|---|
| national | 100 | 8313 | 26.2 | 7.6 | 3.23 | 100 | 100 | 100 |
| food crop | 44.1 | 6184 | 36.3 | 11.2 | 4.85 | 61.0 | 64.6 | 66.2 |
| cash crop | 27.1 | 8069 | 17.7 | 4.0 | 1.38 | 18.3 | 14.1 | 11.6 |
| non-crop agriculture | 2.0 | 8773 | 22.6 | 7.1 | 3.21 | 1.7 | 1.9 | 2.0 |
| mining | 0.2 | 6044 | 0.9 | 0.5 | 0.22 | 0.0 | 0.0 | 0.0 |
| manufacturing | 3.4 | 11167 | 14.2 | 3.5 | 1.25 | 1.9 | 1.6 | 1.3 |
| public utilities | 0.1 | 15007 | 0.0 | 0.0 | 0.00 | 0.0 | 0.0 | 0.0 |
| construction | 1.0 | 10083 | 16.9 | 2.8 | 0.68 | 0.7 | 0.4 | 0.2 |
| trade | 6.7 | 14377 | 6.1 | 1.2 | 0.36 | 1.6 | 1.1 | 0.7 |
| hotels | 0.9 | 12036 | 8.8 | 1.2 | 0.18 | 0.3 | 0.1 | 0.1 |
| transport/comm. | 1.9 | 15337 | 12.5 | 3.2 | 1.09 | 0.9 | 0.8 | 0.6 |
| misc. services | 2.1 | 11747 | 20.1 | 4.7 | 1.76 | 1.6 | 1.3 | 1.2 |
| gov. services | 5.6 | 12755 | 12.1 | 2.5 | 0.79 | 2.6 | 1.8 | 1.3 |
| not working | 4.8 | 7975 | 51.1 | 19.5 | 9.83 | 9.4 | 12.3 | 14.7 |

CPAE = consumption per adult equivalent

**Table 18: Sectoral decomposition of changes in poverty between IHS and MS-3**

**a) Poverty**

| | Percentage contribution to | | |
|---|---|---|---|
| | P0 | P1 | P2 |
| Food crop | 27.1 | 34.2 | 37.6 |
| Cash crop | 44.8 | 44.9 | 44.7 |
| Non-crop agriculture | 2.8 | 3.9 | 3.7 |
| Mining | -0.3 | -0.1 | 0.0 |
| Manufacturing | 6.6 | 5.1 | 5.0 |
| Public utilities | 0.3 | 0.1 | 0.1 |
| Construction | 0.5 | 0.6 | 0.5 |
| Trade | 6.4 | 5.2 | 4.7 |
| Hotels | 0.5 | 0.3 | 0.3 |
| Transport/comm. | 2.6 | 1.5 | 1.3 |
| Misc services | 0.1 | 0.0 | 0.1 |
| Gov services | 4.9 | 3.8 | 3.6 |
| Not working | -1.0 | -3.8 | -5.8 |
| Total intra-sectoral | 95.3 | 96.6 | 95.8 |
| Total inter-sectoral | 0.9 | 1.6 | 1.9 |
| Total interaction | 3.9 | 2.8 | 2.4 |

**b) Poverty relative to the food poverty line (only)**

| | Percentage contribution to | | |
|---|---|---|---|
| | P0 | P1 | P2 |
| food crop | 34.0 | 38 | 41.6 |
| cash crop | 47.2 | 45.6 | 44.3 |
| non-crop agriculture | 4.5 | 3.7 | 3.2 |
| mining | 0.1 | 0.1 | 0.1 |
| manufacturing | 5.0 | 4.5 | 5.3 |
| public utilities | 0.1 | 0.0 | 0.0 |
| construction | 0.1 | 0.2 | 0.2 |
| trade | 4.3 | 4.2 | 4.5 |
| hotels | 0.3 | 0.2 | 0.2 |
| transport/comm. | 1.1 | 1.2 | 1.1 |
| misc services | -0.6 | 0.3 | 0.5 |
| gov services | 3.1 | 3.8 | 3.7 |
| not working | -3.6 | -6.2 | -8.9 |
| total intra-sectoral | 95.5 | 95.7 | 95.7 |
| total inter-sectoral | 1.4 | 1.8 | 2.4 |
| total interaction | 3.1 | 2.5 | 1.9 |

**Appendix Table: Summary of changes in poverty and mean consumption per capita**

| | | IHS | MS-1 | MS-2 | MS-3 |
|---|---|---|---|---|---|
| Mean CPAE | national | 7091 | 7575 | 7906 | 8310 |
| | rural | 6183 | 6504 | 6908 | 7211 |
| | urban | 13444 | 14834 | 14840 | 15086 |
| P0 | national | 55.6 | 50.3 | 49.2 | 45.6 |
| | rural | 59.4 | 54.8 | 53.3 | 49.7 |
| | urban | 29.4 | 19.6 | 21 | 20 |
| P1 | national | 20.3 | 16.4 | 15.8 | 15.1 |
| | rural | 22 | 18.1 | 17.2 | 16.6 |
| | urban | 8.7 | 5.2 | 6.5 | 5.5 |
| P2 | national | 9.92 | 7.25 | 6.98 | 6.96 |
| | rural | 10.81 | 8.04 | 7.59 | 7.73 |
| | urban | 3.67 | 1.92 | 2.72 | 2.21 |

**Figure 1: Poverty incidence curves 1992-1996**