POVERTY ANALYSIS

OF THE INTEGRATED HOUSEHOLD SURVEY

CSD IN THE GAMBIA

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Executive Summary

This report presents the first final results of the poverty analysis of the Integrated Household Survey in the Gambia. The results correspond to the collection period that covers five quarter in 2003-2004.

The ***head-count index estimated with the upper poverty line is*** P_0 = ***57.9*** *% with a standard error of 1.99 %. It is of 51.1 % (Standard error 2.13 %) when using instead the lower poverty line. The poverty gap with the upper line is estimated at 25.1 % (respectively 20.8 % with the lower line). The poverty severity index is 13.8 % (respectively 11.0 %). Finally, the estimate of the Watts index is 39.0 % (respectively 31.7 %).*

Using per adult-equivalent living standard based on nutritional equivalence scales instead of per capita living standard in the estimation of poverty estimates considerably reduces the estimated poverty head-count indices: 39.7 percent with the lower poverty line and 46.3 percent with the higher poverty line.

Poverty incidence is clearly much lower in Banjul than in the other strata which are all characterised by a large proportion of poor persons. Beyond Banjul, the smallest incidences of poverty are in Kaninfing (32.1 percent), Brikama Urban (41.9 percent), Kerewan Urban (42.7 percent) and Basse Urban (44.3 percent). The highest incidences of poverty are in Mansakonko Urban (65.7 percent), Kerewan Rural (67.0 percent), Jangjangbureh Rural (62.9 percent), Basse Rural (63.2 percent) and especially Kuntaur Rural (91.9 percent). However, the standard errors are large at this disaggregation level.

Urban areas have a much lower poverty rate (P_0 = 39.6 %) and much lower estimated poverty with P_1, P_2 and W, than rural areas (P_0 = 67.7 %). However, the incidence of poverty out of Banjul and Kanifing remains very substantial even in urban areas (P_0 = 56.0 %).

Households with female heads are characterised by higher poverty (P_0 = 60.3 % instead of P_0 = 40.7 % for households with male heads). Not all ethnic groups are equally affected by poverty. The poorest groups, with any estimated poverty measure, are the Mandinka (P_0 = 67.3 %) and the Fula (P_0 = 66.3 %).

Poverty is higher among households whose head are married (P_0 = 59.4 %) and lower among households whose head have never been married (P_0 = 31.8 %). The union type also matters, with much higher poverty rates among households led by polygamous heads (P_0 = 68.3 %) than among households led by monogamous heads (P_0 = 49.9 %). In terms of housing status, owners are less often poor (P_0 = 46.4 %) than tenants (P_0 = 64.6 %). As expected, non-educated heads are more often poor (P_0 = 65.0 %) than heads with education (P_0 = 40.6 %). The subjective perception of poverty does not correspond to its economic measure.

Larger households (i.e., with more members) have higher poverty, from P_0 = 13.3 % for households with three or less members, up to 71.1 % for households with 10 or more members. Poverty also increases with the age of the household head. Households led by young heads (below 30 years old) have lower poverty rates (39.5 %), while households led by elderly heads (50 year old or older) have very high poverty rates (64.6 %).
Households whose head is peasant or agricultural worker, unskilled worker or unemployed are poorer (with respectively: P_0 = 79.3 %, 65.4 % and 62.6 %). On the contrary, households whose head works in services are less poor (P_0 = 31.6 %).

Households whose head is employed in the agricultural and fishing sector are poorer (P_0 = 76.3 %) than other households. This is also the case to a smaller extent for households whose head works in the construction sector (P_0 = 63.6 %). By contrast, households whose head works in social and personal services (P_0 = 45.3 %), in the sector 'Trade, Hotels and Restaurants' (P_0 = 48.7 %), and in Private and Public Financial Administrations (P_0 = 49.1 %) are less poor.
Finally, poverty is much higher among groundnut producers (P_0 = 76.6 %) versus other households (P_0 = 46.2 %).

1. The context

UNDP (2001) provides a review of a common perception of the welfare situation of Gambian households before the publication of the IHS results. The yearly mean expenditure per adult-equivalent was assessed at 5,926 Dalasi in 1998 with on aggregate 66 percent of the consumption expenditure going to food. In this year, about 67 percent of the population and 55 percent of the households were considered as poor according to this publication. In fact, at that time many different figures for poverty could be found in the Gambia and the estimations of poverty were subject to debate.

The poorer areas were general considered to be the Central and Upper River divisions, while Banjul was seen as the richer one. Access to safe sanitary services is considered very low with 7.4 percent. Life expectancy is also poor at 55 years. However, other figures show important progress in social indicators in the last few years. For example, net primary enrolment has shifted from 45 percent in 1990 to 50 percent in 1997; infant mortality from 167 per mil in 1983 to 92 per mil in 1993.

The past information on poverty from various surveys and analyses has been summarized in Republic of The Gambia (2002f). One striking feature is the occurrence of brutal variations of poverty estimates over years (head-count index in rural areas of: 76% in 1989, 41% in 1992, and 80% in 1998; in urban areas: 64% in 1989, 40% in 1992, and 62% in 1998). Such extreme shifts are likely to reflect shortcomings in the collection design, uncorrected price differences across household and period, and inflexible and inappropriate definitions of the poverty lines, as much as true variations

in living standards. This diagnostic is supported by nutritional statistics for children which do not follow this wild temporal pattern (National Nutritional Agency, 2004).

Then, the present poverty estimates provide an opportunity to adjust perceptions about poverty in the Gambia.

We now turn to the description of the living standard indicators and the poverty measures used in the poverty analysis based on the IHS data.

2. The Living Standard Indicators

The household living standard indicators are based on the value of consumption. Household living standard indicators are typically corrected for the two main sources of heterogeneity in household situations: household composition and prices. In order to satisfy this requirement, the living standard indicator for household *s* is defined as

$$y_s = c_s/(S.I_s)$$

where c_s is the value of consumption of household *s*, *S* is the household size (or a household equivalence scale). The deflated living standard indicator is denoted *per capita real living standard* when S is the household size, and *per adult-equivalent real living standard*, when S is another equivalence scale. The non-deflated living standard indicator is denoted nominal living standard. Our preferred definition of the household living standard indicator is the per capita real consumption, which allows for international comparisons.

Because the collection covered five quarters rather than one year, the estimates cannot be considered, strictly speaking, as describing uniquely the 2003 situation. Future estimates restricted to 2003, and to each of the five quarters of the survey, should be produced. However, the estimation results of this volume have been normalized so that the living standard indicators correspond to 365 days.

The treatment of geographical and temporal price dispersions is crucial. Indeed, if the correction for differences in prices that distinct households face at separate periods is inaccurate, then apparent welfare fluctuations, or welfare differences between households, might mostly result from unaccounted large price differences (Muller, 2002). The correction for price differences is implemented by deflating the living standard indicator with a Laspeyres price index.

3. The Poverty Measures

Our estimates are much based on the Foster-Greer-Thorbecke poverty measures (Foster, Greer and Thorbecke, 1984). We especially focus on P_0, the *head-count index*, which corresponds to the percentage of the poor, and on P_2, the poverty severity index that accounts for the inequality among the poor.

$P_0 = \int_0^z dF(y)$, where F is the cumulative density function (cdf) of the personal living standard (y) distribution and z is the poverty line.

$P_2 = \int_0^z (1 - y/z)^2 \, dF(y)$. The Watts index satisfies the monotonicity, transfer and transfer sensitivity axioms, and is decomposable.

P_1 is the poverty gap index and shows the share in total value of the living standards that should be theoretically reallocated to eliminate poverty: $P_1 = \int_0^z (1 - y/z) \, dF(y)$. This index satisfies the monotonicity axiom, the transfer axiom, the sub-group monotonicity axiom and is decomposable.

The Watts poverty index, introduced by Watts (1968), is $W = \int_0^z -\ln(y/z) \, dF(y)$. P_2 and W provide less intuitive statistics than P_0, but they account for the severity of poverty among the poor, which is not the case for P_0 and P_1.

Thus, poverty is estimated using classical indicators that can be seen as means of individual poverty functions. Indeed, our poverty measures can all be written as

$P = \int k(y, z) \, dF(y)$, where *k* is the kernel function describing the poverty severity for living standard *y* with poverty line *z*, and *F* is the cdf of living standards. The individual poverty functions, k(y, z), are therefore the following ones:

(1) For P_0: $I(y < z)$, which is the dummy variable identifying the poor. As mentioned above, variable y is the individual living standard and z is the poverty line.

(2) For P_1: $I(y < z) \cdot ((z-y)/z)$.

(3) For P_2: $I(y < z) \cdot ((z-y)/z)^2$.

(4) For W: - I(y< z) . ln(y/z).

In these conditions, the estimator of the poverty measure is the following, based on ratios of the classical Horwitz-Thompson sampling estimator of the mean:

$$\hat{P} = \frac{\sum_{s=1}^{n} POND_s \; HHS_s \; k(y_s, z)}{\sum_{s=1}^{n} HHS_s \; POND_s} \quad ,$$

where $POND_{st}$ is the sampling weight of surveyed household s ($s = 1,...,n$) and HHS_s is its household size.

Using the cdf of personal living standards while only household are observed implies to weigh the function in the integral by the household size (or by the adult-equivalent scale when used in the definition of the living standard variable[1]). The introduction of household size weighing justifies the use of ratio estimators. Simpler Horwitz-Thompson sampling mean estimators provide qualitatively similar results. We also estimate sampling errors for poverty indicators. The sampling estimators are discussed in Muller (2004b, 2006). The estimators have been validated by checking subpopulations for each stratum.

[1] See Ebert and Moyes (2003).

4. The Poverty Lines

4.1. The past poverty lines and the inflated poverty lines

A few poverty analyses have already been carried out in The Gambia, notably based on the two previous consumption surveys of 1993 and 1998. The poverty lines estimated in The Gambia (from surveys in 1989, 1993 and 1998) have already been criticized (The Republic of The Gambia, 2002). However, they bring a natural comparison benchmark.

An ILO study ("Poverty in The Gambia", 1992) established the first poverty line in the Gambia. It was based on a minimum food basket to reach energy requirements per age-gender adult equivalent. In the report of the 1993 survey, it is stated that "The ILO study selected households with a food consumption per adult-equivalent unit corresponding roughly to the food poverty line... Rural households spending 75 to 125 Dalasi per month per adult-equivalent unit were selected and the food poverty line for rural households was 100 Dalasi per month per adult-equivalent unit. These households spend 25 Dalasi per month per adult-equivalent unit on non-food items." Therefore, the poverty line for rural household was established at 125 Dalasi. The same procedure for urban households led to a poverty line of 186.50 Dalasi. Unfortunately, the ILO study has been lost and is no longer available in the Gambia or on ILO web site.

Then, in the report of the 1998 survey, there is an updating of the 1992/93 poverty line using the price index for the food basket used (some cost is calculated for this food basket which has seven categories). Therefore, it seems that the 1993 (and 1998) poverty lines have been obtained by merely updating an ad hoc price index for the poor,

which unfortunately is excessively determined by the price of the fish item (represented by barracuda, an expensive food item). Moreover, the vegetable used in the ILO study price index cannot be identified.

Several shortcomings appear in the way past poverty lines have been calculated. First, the definition of the population on which the poverty line is anchored, by using consumption baskets, seems too broad to accurately characterise the households with living standards around the expected poverty line. This may have produced bias in that the consumption structure for rich or excessively poor households may have unduly influenced the calculus of the poverty line. Second, the non-food part of the poverty line was calculated by using a proportional rule which may have distorted the important roles of household income, other household characteristics and prices in determining non-food expenses. In particular, income effects were ignored for extrapolating the non-food poverty line. Using more flexible food demand estimates helps us for correcting for an insufficient account of the heterogeneity of expenditure allocation across households. Third, the price correction was inaccurate and based on non-representative products. For example, the price of barracuda in Banjul, a luxury fish, was used as representative of the whole fish category. Fourth, insufficient stratification prevented to account for regional and temporal variations in consumer baskets. Consequently, we have designed and carried out a new methodology for the calculus of the poverty line. This is important because most of the results of the poverty analysis crucially depend on the level of the poverty threshold.

We found additional deficiencies in the calculation of the poverty line in 1998. First, this poverty line was calculated using the 1993 consumption structure. It would have

been more consistent to use the 1998 consumption basis. Moreover, the price data used to calculate the 1998 poverty line only covers about one month in 1998 instead of one year for the price data used in 1993. Finally, the inflation correction with the inflated 1993 poverty line was far from perfect. Indeed, the used price index weight have been criticized and the price index only covers the Banjul area.

It seems that the excessively low level of the 1993 and 1998 inflated poverty lines comes from the fact that they are themselves inflated from a 1989 poverty line of which accurate definition has been lost, but is based on the cost of a fixed basket of consumed items. This is particularly worrying for several reasons. First, the information that we could gather about the 1989 poverty line (from a document by ILO in 1992) suggests that its empirical basis is weak. Indeed, only a very local survey was implemented (by UNICEF) to produce this 1989 poverty line and the stated consumption basket is based on too few products to be credible. Second, it seems that the measurement units for consumption records where not properly measured both in 1993 and 1998 surveys. So, it is difficult to believe that proper adjustment for inflation anchored on the cost of a typical basket has been done if the quantity information is in fact missing in these surveys. We met the same difficulty with the IHS data, which we solve by anchoring the poverty line on the calorie price of a few well observed basic food products.

Because the complete IHS consumption data was not ready to allow us to estimate a specific poverty line for 2003, we chose in the past to consider the inflated 1993 and 1998 poverty lines by sector for preliminary results (Muller, 2004a). That is: the national price index of the Gambia (in practice a Banjul price index) was used to

convert the poverty lines used in the past surveys in the different domains (Banjul and Kanifing, Other Urban, Rural).

Our inflation of the 1993 and 1998 poverty lines based on adult-equivalent scales was implemented as follows. The 1992 poverty lines (per adult-equivalent) were D 2443 for Greater Banjul, D 2404 for Other Urban areas, D 1777 for Rural areas. The 1993 poverty lines (per adult-equivalent) were D 3789 for Greater Banjul, D 3108 for Other Urban areas, D 2756 for Rural areas. Finally, the 1998 poverty lines (per adult-equivalent) were D 5538.78 for Greater Banjul, D 3898.15 for Other Urban areas, D 3087.55 for Rural areas. Therefore, the conversion using the Banjul price index yields the corresponding poverty lines in 2003 Dalasi:

- Inflated 1993 poverty lines (per adult-equivalent): D 3789 for Greater Banjul, D 3108 for Other Urban areas, D 2756 for Rural areas.
- Inflated 1998 poverty lines (per adult-equivalent): D 7455 for Greater Banjul, D 5246 for Other Urban areas, D 4155 for Rural areas.

Note that we prefer poverty lines per capita that need to be calculated from the poverty lines per adult-equivalent. We now indicate explicitly the detail of the calculus of the inflated monthly poverty lines obtained by inflating the 1993 and 1998 poverty lines, using the Banjul CPI. The inflation correction is based on June. We first calculate poverty lines correspond to living standards calculated in terms of adult-equivalents.

We obtain for Greater Banjul 1993: z1 = D (2443/12)*(1+((2006.21-1293.44)/1293.44)) = D 315.77 per month = D 3789 per year.

For Other Urban 1993: z2 = D (2004/12)*(1+((2006.21-1293.44)/1293.44)) = D 259.02 per month = D 3108 per year.

For Rural 1993: z3 = D (1777/12)*(1+((2006.21-1293.44)/1293.44)) = D 229.68.

For Greater Banjul 1998: D z4 = D (5538.78/12)*(1+((2006.21-1490.3)/1490.3)) = D 621.34 per month = D 7455 per year.

For Other Urban 1998: z5 = D (3898.15/12)*(1+((2006.21-1490.3)/1490.3)) = D 437.30 per month = D 5246 per year.

For Rural 1998: z6 = D (3087.55/12)*(1+((2006.21-1490.3)/1490.3)) = D 346.36 per month = D 4155 per year.

Then, the corresponding poverty lines for indicators per capita are obtained by multiplying these lines by the ratio (6.56/8.61) of the mean household equivalent-scale over the mean household size. We obtain:

For Greater Banjul 1993: D 24058.

For Other Urban 1993: D 19734.

For Rural 1993: D 47340.

For Greater Banjul 1998: D 47340.

For Other Urban 1998: D 33318.

For Rural 1998: D 26389.

If wished, exchange rate data can be used to convert those poverty lines into other currencies: (for 3 February 2003) 24.29 Dalasi for 1 US$ and 24.73 Dalasi for 1 Euro.

Although, a lot of energy has clearly been put in past analyses, more progress is clearly needed for the methodology to define the poverty lines in the Gambia.

4.2. The new poverty lines

4.2.1. The general method

A large literature deals with the construction of poverty lines in Less Developed Countries[2]. However, the technique for updating the poverty line is a question that has not yet reached a consensus among researchers. In this report, we adapt the method promoted by Ravallion (1998) to a situation of missing data for food quantities and using robust extrapolation methods. The poverty line is calculated to correspond to the situation of 2003. We first describe the estimation of the food component for the new 2003 food poverty lines. Then, we explain the extrapolation step taken to produce the final poverty lines.

The poverty lines are based on the a priori choice of a reference group (RG) selected in such a way that the living standards of the households in this group are close to the expected poverty line. Although some arbitrariness is unavoidable in the choice of the RG, one is constrained in this choice by the requirement that very poor households and rich households be excluded from this group.

We calculate specific poverty lines for the three following domains: Banjul and Kanifing; Other Urban areas; Rural areas. We choose to isolate Banjul and Kanifing together because they share higher population densities and similar catering sources. Dividing the country in this way allows us to better account for varying tastes, prices

[2] Greer and Thorbecke (1986), Calan and Nolan (1991), Ravallion and Bidani (1994), Ravallion and Sen (1996), Barrington (1997), Ravallion (1998).

and catering situations across these domains. For each domain, we estimate a lower and a higher poverty lines for 2003. Z^L denotes the lower poverty line. Z^U denotes the upper poverty line.

The method we wanted to apply for the estimation of the *new poverty lines* was in nine steps, all based on sampling estimators.

(1) We choose a reference group whose living standard is close to the expected poverty line, for each domain j (j = 1,…,3).

(2) We define calorie requirements for households in this reference group in each domain j: CR_j. For this, we estimate the average household size, S_j, the average adult-equivalence scale (and other average household characteristics) for the reference group. The calorie requirement for a young adult male is chosen at 2700 kcal per day, to account for activity levels consistent with work. It is divided by the mean household size and multiplied by the mean equivalence scale. The latter adjustments allow us to account for nutritional requirements increasing by age and gender of household members.

(3) We estimate the mean composition structure of consumption for the reference group and the mean composition structure of food consumption, in value.

(4) We estimate the value of the mean food consumption for the reference group in each domain j, V_j.

(5) Converting the data on consumption quantities, we calculate the calorie level of the mean food consumption for the reference group in each domain j, C_j.

Then, we estimate the calorie unit-value, or ‘calorie price’, for the reference group in each domain j, $CUV_j = V_j/C_j$. *In practice, as we shall explain later, the steps (4) and (5) will need to be adapted because of missing data for food quantities.*

(6) We calculate the food poverty line, z_j^F in each domain j as the estimated value of the calorie requirement for each domain j.

$z_j^F = CUV_j\ CR_j = (V_j\ CR_j)/C_j$.

(7) We estimate the demand function for food for the group of reference in each domain j. The model is the following.

$$s_{ij} = \alpha_j + \beta_j \ln(x_{ij}/z_j^F) + \gamma_j [\ln(x_{ij}/z_j^F)]^2 + (N_{ij} - N^r_j)' \delta_j + (\text{logPrice}_{ij} - \text{logPrice}^r_j) \varphi_j + \varepsilon_{ij},$$

where α_j, β_j, γ_j, δ_j, φ_j are parameter vectors to estimate, s_{ij} is the food share (in percentage) of household i in its total consumption in domain j, x_{ij} is the per capita consumption of household i in domain j, N_{ij} is a vector of household and environment characteristics in domain j and N^r_j is the corresponding vector of mean characteristics for the reference group in domain j, logPrice_{ij} is a vector of logarithms of prices facing household i in domain j, logPrice^r_j is the corresponding vector for the reference group. Finally, ε_{ij} is an error term. These demand equations are consistent with the Quadratic Almost Ideal Demand System proposed by Banks et al. (1997), where unobserved environment and household characteristics are ignored.

(8) From these estimates, we extrapolate the lower poverty line for each domain j: $z^L_j = z_j^F\ (2-\alpha_j)$.

A few comments are useful to clarify this calculus. The lower poverty line (Z^L) corresponds to households who can just afford to meet their nutritional requirement. The calculus of the lower poverty line is based on two subjacent assumptions: (1) basic non-food needs are satisfied before basic food needs; (2) both food and non-food are normal goods once survival needs are satisfied. Under these conditions, let us denote $f_j(y)$ the food spending for an income level y in domain j and let z_j^{NF} be the non-food

poverty line in domain j (i.e. the complement of the food part in the budget of a 'just poor person'). The lower poverty line in domain j is $z^L_j = z_j^F + z_j^{NF}$. Consider a person such that $y = z_j^F$. Under the chosen assumptions, anything that this person spends on non-food is considered to be a minimum allowance for basic non-food needs since the person gave up basic food needs. Then, a minimum allowance for non-food basic needs is $y - f_j(y) = z_j^F - f_j(z_j^F)$. Thus, the total poverty line is $z^L_j = z_j^F + z_j^F - f(z_j^F) = 2z_j^F - f(z_j^F)$. If the food demand equation is as above, one obtains for domain j: $z^L_j = z_j^F (2-\alpha_j)$.

(9) The upper poverty line is the solution of the food demand equation where the food share is made equal to the food poverty line and the unknown variable takes the place of x_{ij}. To be explicit: the upper poverty line, z_j^U is obtained by solving in z the following equation, separately for each domain j: $z_j^F/z = \alpha_j + \beta_j \ln(z/z_j^F) + \gamma_j [\ln(z/z_j^F)]^2$.

In practice, the solution is numerically obtained by iterating the method of Newton. The upper poverty line (Z^U) corresponds to households that actually meet their nutritional requirements.

4.2.2. The new poverty line: practical estimation

We now discuss the practical estimation of the food poverty lines for each domain. The reference group (RG) chosen to anchor the 1998 poverty lines is the set of households belonging to quintiles 2, 3 and 4 of the per capita real consumption. The RG is broadly representative of the population of households around the calculated poverty lines. It corresponds to substitutions between food and non-food consumption that are consistent with observations of actually satisfied food minima. Restricting the estimation of the

food share equation to the RG mostly excludes extremely poor households and rich households, as well as outlier households whose observations are affected by measurement errors. The choice of a broad RG is justified by the necessity of getting sufficient sample sizes for each domain to ensure an accurate estimation of the food equation share.

The recommended calorie needs are 2700 calories per day per person and correspond to what is typically used to account for moderate household members activities (FAO/WHO/UNU, 1985, ICMR, 1981). We extrapolate this figure using the ideal weights of the household members, which are calculated from their age and gender. The equivalence scales used for the 1998 survey have been used to carry out this calculus. The mean recommended needs are estimated for each domain and each reference group because they correspond to different household populations.

The practical stages in the calculus of the poverty lines for the Gambia are as follows.

- The data for households with missing household size or missing consumption value are eliminated, as well as when the per capita consumption is below 100 Dalasi per year.
- The living standard variable is defined as the consumption value for one year, divided by the product of the household size (or the adult-equivalent scale) and the household Paasche price index.
- The reference group is defined as the set of households such that their per capita living standard is between 3894 Dalasi and 9353 Dalasi (second and fourth quintiles of per capital living standards).

- Three domains are defined to account for some geographical differences in consumption habits and catering: Banjul and Kanifing, Other Urban, Rural Areas.
- The calorie reference level is chosen equal to 2700 Calories a day per capita, denoted Znut. It is multiplied in each domain by the mean household equivalence scale and divided by the mean household size, both for the reference group.

We dispose of an adult-equivalent scale calculated by age in the report of the 1993 survey. With this scale the nutrient requirement for an adult-male of age 23-50 corresponds to 2700 calories per day, and it can be converted in smaller amount for other categories of members.

For the whole country the mean household size is 8.35 and the mean adult-equivalent scale is 6.76. For the reference group in Banjul and Kanifing we obtain respectively: 6.41 and 5.26; respectively for Other Urban: 7.44 and 6.07; respectively for Rural Areas: 9.68 and 7.77.

- We intended to define the food poverty line in each domain as ZF = Znut*(x/y), where x is the mean value of food consumption in the domain, and y is the mean calorie quantity of food consumption in the domain.

However, because we do not observe the consumed quantities for most food products, we must adapt the method. Ten products are the only ones for which we can observe quantities in good conditions: rice, sugar, bread, groundnut oil, vegetable oil, palm oil, sardine, magi, teabags, salt. We exclude products corresponding to too high calorie prices, not likely to constitute a substantial share of the diet of the poor. Then, instead of mean values over all products, we rather use the mean value and the mean quantity of calories for four food items: rice, bread, sugar and maggi cube.

The general 'calorie price' variable is defined as pxcal = ZF/Znut for the whole food consumption. Similarly calorie prices can be calculated for any of the ten selected products for which we observe consumption. We denote them $pxcal_i$, i = 1,…, 10.

Weighing the four selected products according to their budget shares allows us to give a new definition of the food poverty line for each domain:

ZFd_j = 2700 x [($\Sigma^4_{i=1}$ w_i $pxcal_{ij}$) / ($\Sigma^{j6}_{=1}$ w_i)] x [(mean household equivalence scale in domain j for the RG) / (mean household size in domain j for the RG)], where $pxcal_{ij}$ is the calorie price of product i in domain j, and w_i is the consumption share of food i in the value of consumption, j = 1,..,3; i = 1,…,4. This is a novel method based on a few products with well-defined measurement units. In practice in this formula we choose to allocate each product calorie price to the category that it represents in the Paasche index. Then, the weights w_i are the budget shares of these categories rather than the budget shares of the elementary products. A better weighing system would have been to use the calorie share of food i in the total calorie amount in food consumption, but this information is not available. ZFd_j is the food poverty line used for our main poverty estimates.

We first tried to calculate calorie prices by products by using the quantities and values recorded in the file 'Ref_prods.dat', which concentrated this information from the budget files. Despite the creation of new variables for quantity and calorie content, correcting for many errors in the treatment of measurement units, the obtained results were not satisfactory. In particular, the obtained calorie prices, notably for the rice, are much too high, which lead to estimated poverty incidence close to 100 percent.

Moreover, the obtained calorie price at household level are too variable to be a credible base of estimation. We attribute this problem to the bad quality of the file data.

Accordingly, we moved to a definition of the calorie prices directly from the price data base, which contains better information on value and quantity for a small set of consumed products. These product prices are multiplied by standard calorie contents obtained from the most recent nutritional publications. The resulting calorie prices and their variation across households and domains is much more reasonable than before. The calorie prices of rice, sugar and maggi cube are lower in Banjul and Kanifing, closer to catering sources. In contrast, the calorie price of bread is lower in rural areas.

As a control, we also attempted to base our calorie price on the main staple food in the Gambia, rice. This yields a food poverty line that we denote ZFrice.

The standard calorie contents are as follows for the used product: rice 1297 Kcal per Kg, sugar 3870 Kcal per Kg, bread 2600 Kcal per Kg, palm oil 8839 Kcal per Kg, maggi cube 2333 Kcal per Kg, sardine = 2082 Kcal per Kg, tea bag 8.43 Kcal per Kg.

As we mentioned above, the extrapolation from the estimated food poverty line Z^F to the upper poverty line Z^U is based on an estimation of a linearized Quadratic Almost Ideal Demand System limited to the equation for food. This equation, which incorporates prices, is estimated by a robust regression method. Other estimation methods have been used but we found that the estimates based on Huber estimators perform better. We attempted to instrument the total consumption, where the main instruments were informations about the type of material of the household home, and

other domestic capital characteristics. Unfortunately, this did not lead to satisfactory estimates.

We run the estimation simultaneously for the three domains with coefficients specific to each domain. Thus, the extrapolation of the non-food component of the poverty line can be specific to each domain so as to account for regional situations.

The estimation results provide significant intercept terms, a requisite for the success of the extrapolation method. The number of adult members strongly affects the food share. Other important significant regressors are the total expenditure and some prices.

After thoroughly examining the estimation results, we decided to use the results of the Huber robust regression estimation. Beyond the robustness properties of the Huber robust regression (eliminating outliers caused by excessive data contamination), we decided to select this estimation method because it correspond to the largest set of significant coefficients among all tried estimation methods. Note however, that OLS estimates would provide relatively close poverty line results (as opposed to 2SLS or quantile regression estimates). In all cases, the estimators are corrected to account for the sampling scheme.

Estimates of the food equation

	Banjul and Kanifing	Other Urban	Rural
Number of obs.	759	385	1094
Logarithm of the per capita value of food expenditure	-.1192499 (0.000)	-.0340594 (0.027)	-.0159821 (0.061)
Square of the logarithm of the per capita value of food expenditure	.003355 (0.561)	.0051958 (0.541)	-.0202008 (0.000)
Number of children members (centered by domain)	-.0030174 (0.406)	-.0024565 (0.529)	.0004564 (0.814)
Number of adult members (centered by domain)	-.0111036 (0.000)	-.0125955 (0.000)	-.0085673 (0.000)
Number of elderly members (centered by domain)	-.020153 (0.179)	-.004335 (0.765)	-.0170574 (0.023)
Education of the household head (centered by domain)	-.0003303 (0.792)	-.0023263 (0.169)	-.0029469 (0.013)
Logarithm of the price of rice (centered by domain)	-.0414939 (0.493)	.1451394 (0.011)	.0710594 (0.001)
Logarithm of the price of sugar (centered by domain)	-.3209716 (0.002)	-.1589436 (0.394)	.0343045 (0.685)
Logarithm of the price of bread (centered by domain)	.1328267 (0.187)	.2098645 (0.000)	.0167178 (0.601)
Logarithm of the price of palm oil (centered by domain)	-.1573004 (0.016)	-.2073791 (0.010)	.0252668 (0.534)
Logarithm of the price of salt (centered by domain)	-.0735113 (0.013)	.0443938 (0.165)	-.0120483 (0.606)
Logarithm of the price of magi cube (centered by domain)	-.1419116 (0.034)	.1409468 (0.015)	-.0187251 (0.614)
Logarithm of the price of sardine (centered by domain)	-.0385215 (0.684)	-.030046 (0.811)	.1802039 (0.000)
Logarithm of the price of tea bag (centered by domain)	.1908773 (0.225)	dropped	-.3166419 (0.005)
Logarithm of the price of washing soap (centered by domain)	.2052365 (0.026)	-.1974742 (0.023)	-.0690301 (0.171)
Logarithm of the price of candle (centered by domain)	-.0082443 (0.827)	-.0251637 (0.626)	-.055271 (0.119)
Intercept	.744267 (0.000)	.6547548 (0.000)	.6687323 (0.000)

Dependent variable = food budget share. P-value in parentheses.

4.2.3. A few delicate issues

One very serious issue for the implementation of the method for calculating the poverty line is that consumed food quantities have been very badly observed in the IHS survey. Most of the recorded quantities are in terms of ‘heaps’, ‘cups’, ‘bags’ or other undetermined containers or shapes. Only for a few products can the actual measured quantity be inferred. This makes the general conversion of food consumption into calorie levels impossible.

In these conditions we extrapolate the calorie unit-value V_j/C_j by affecting the few food products with observed quantities to broad food consumption categories. The weight of these categories in the Paasche price index was used to aggregate the obtained calorie unit-values. The obtained index number for the calorie unit-value was used to derive the food poverty line.

Several shortcomings may affect this approach. First, the obtained calorie price may be sensitive to the subset of products with observed quantities. Second, some quantity and calorie data may be doubtful for some of these products. We decided to base the calculation of the calorie price *exclusively* on: rice, the staple food in the Gambia, bread, sugar and maggi cubes. Admittedly, this is an imperfect basis for the calculation of the food poverty line, although much more satisfactory than arbitrary conventions or use of inflated poverty lines. It has also the advantage of allowing the use of the 2003 budget data to extrapolate the non-food poverty line rather than relying on external sources describing different time or location situations than the Gambia in 2003. Then, one reason to prefer the new poverty lines is that it is necessary to account for the present

situation of the Gambia (prices, qualities of consumed goods, environment, household characteristics and perceptions) to estimate the poverty lines.

A difficulty with the inflated lines used in the past is that they were heavily based on the CPI. Unfortunately, this price index is not the one that one would like to dispose of. Indeed, without mentioning the well-known weaknesses of the present CPI, the price level and the price structure for the reference group are not necessarily the ones for the whole population. A specific price index representing better the consumption structure of the poor would be desirable since some items used in the definition of the weights of the national price index are typically not consumed by the poor. Also, regional price indices for urban and rural areas would be important since the distribution of poverty across domain is not only of interest, but also a basic component of the method on which the lines are based. Naturally, such concerns are also partly valid for the new poverty lines. However, one expects that our new method captures part of the price differences across time and households.

Other few words of precaution about price differences are useful. In other countries, it has been observed that much of the cost-of-living differences between city and countryside come from the non-food component that is little present in our Paasche price index. Since we do not observe quantities for most homogeneous non-food products, there is little that can be done to correct this in these data. Another issue is that rents may be the central ingredient of the non-food component for some households. However, rent transactions are rare in the Gambia and badly observed in these data. Moreover, they normally do not concern the poorest households who are the focus of the poverty study.

4.2.4. The estimates of the poverty lines

We finally obtain the following values for the poverty lines:

ZF = D 4488 in domain Banjul and Kaninfing;

ZF = D 4337 in domain Other Urban;

ZF = D 4615 in domain Rural.

ZL = D 5636 in domain Banjul and Kaninfing;

ZL = D 5835 in domain Other Urban;

ZL = D 6145 in domain Rural.

ZU = D 6388 in domain Banjul and Kaninfing;

ZU = D 6771 in domain Other Urban;

ZU = D 7009 in domain Rural.

5. The Preliminary Poverty Estimates of February 2005

We first return to the preliminary poverty estimates calculated in February 2005. These estimates that were based on the population of persons and on per capita expenditure (excluding own-consumption and profits) were as follows, with the confidence intervals in brackets:

	Inflated 1993 poverty line	Inflated 1998 poverty line
•P0 :	54.1%	73.8%

	[50.1%, 58.1%]	[70.7%, 77.0%]
•P1:	24.0%	39.3%
•P2:	13.5%	25.1%
•Watts:	37.8%	67.5%

These results are now obsolescent. These statistics were preliminary, based on a small sample of surveyed households and incompletely cleaned data files. The data covered only monetary consumption (not including own-consumption and consumption from gifts). No correction for price differences had been implemented. These issues have now been dealt with since the data has been completely cleaned. Moreover, new poverty lines have been calculated and can be used instead of inappropriate inflated poverty lines.

Two important issues, which were affecting the validity of the preliminary results, can now be solved with the complete and cleaned data. The frequency of purchase has now been taken into account in the estimates of household consumption, which was not possible before because the information about the collection dates were not available. This allows a much improved extrapolation of observed consumption records to the year, for the calculation of the consumption indicator of each surveyed household. Finally, the own-consumption and the consumed gifts have been incorporated in the final living standard indicators and poverty estimates.

We now discuss the new poverty estimates.

6. The New Poverty Estimates

6.1. Aggregate poverty measures

As mentioned before, our poverty analyses are based on the living standard variable $y_i = c_i/(S_i P_i)$, where P_i is the *household* Paasche price index, S_i is the household equivalence scale (or household size), c_i is the value of the annual household consumption. Our preferred indicator is the per capita real consumption so as to allow for easy comparisons with poverty estimates in other countries.

The estimation results based on the population of persons and per capita expenditure show that the head-count index estimated with the upper poverty line is of 57.9 % with a standard error of 1.99 %. It is of 51.1 % (Standard error 2.13 %) when using instead the lower poverty line. The poverty gap with the upper line is estimated at 25.1 % (respectively 20.8 % with the lower line). The poverty severity index is 13.8 % (respectively 11.0 %). Finally, the estimate of the Watts index is 39.0 % (respectively 31.7 %). These estimates meet the expectations of many observers about poverty in the Gambia.

We now discuss a few other poverty estimates for comparison purposes.

6.2. Comparison with other estimates

6.2.1. Senegal and other countries

According to the final publications of the Direction de la Prévision et de la Statistique du Sénégal, the incidence of poverty in Senegal, has dropped from the 1994 levels of 61.4 percent of households and 67.9 percent of persons (ESAM I), to lower levels for 2002 (ESAM II): 48.5 percent of poor households and 57.1 percent of poor persons. These figures reinforce the idea of high poverty level in the region.

However, the 2002 Senegal survey was only implemented over four months instead of one year as initially planned. This may partly explain why the poverty figures proposed by the Senegal administration have much varied during the past few years. In comparison the IHS Gambian survey cover a period larger than one year and can therefore provide more representative poverty estimates less sensitive to seasonal variations. It is nonetheless reassuring that our estimates of poverty incidence have the same order of magnitude than what had been found in Senegal, a similar context. Moreover, in Senegal groundnut farmers are found generally poorer than other households. We find the same feature in the Gambia.

Other African countries are characterised by similar level of poverty incidence than the Gambia. For example, one can extract from the World Bank development indicators the following estimates poverty head-count indices, based on national poverty lines (respectively below $1 a day in parentheses): 45.3 (44.9) percent in 1998 Burkina Faso, 40.2 (17.1) percent in 2001 Cameroon, 44.2 (26.3) percent in 1999-00 Ethiopia, 40.0

percent in 1994 Guinea, 63.8 (72.8) percent in 1998 Mali, 46.3 (25.9) percent in 2000 Mauritania, (61.4) percent in 1995 Niger, 51.2 percent in 1993 Rwanda. Although it is fair to say that some of these statistics may be doubtful, the general picture is of high poverty level, of comparable magnitude to the one found in the Gambia for Mali, Niger and Rwanda. On the whole, the perception that the poverty in the Gambia is as serious as in these three countries and more than in Cameroon and Guinea does not seem unwarranted.

6.2.2. Past estimates and other poverty lines for the Gambia

As we mentioned above, directly comparing estimates with 1993 (P_0 = 33 %) and 1998 (P_0 = 68 %) does not make much sense for methodological reasons.

Even using inflated poverty lines with the 2003 data yields incorrect poverty estimates. Indeed, with the new 2003 data using the inflated poverty lines based on 1993 and per capita living standards yields estimates of the head-count index of 9.1 percent, a ridiculously low level. Using the inflated 1998 poverty lines yields an estimated head-count index of about 25.8 percent, again a too low level to be realistic.

Another approach of calculating a poverty line could have been to define it as equal to $ PPP[3] 1 a day per capita, as routinely done in The World Bank publications. PPP GDP is GDP converted into international dollars using purchasing power parity (PPP) conversion factors. It is used because nominal exchange rates do not always reflect international differences in relative prices. At the PPP rate, one international dollar has

[3] Purchasing Power Parity.

the same purchasing power over domestic GDP that the US dollar has over US GDP. PPP rates allow a standard comparison of real price levels between countries, just as conventional price indexes allow comparison of real values over time. The usual PPP conversions are derived from price surveys covering many countries conducted by the International Comparison Program. Unfortunately, this survey has just been implemented in the Gambia a few months ago and was not available to describe the 2003 situation. Then, PPP estimates for the Gambia were derived from statistical models using available data and have little credibility. Population below $1 PPP a day is the percentage of the population living on less than $1.08 a day at 1993 international prices. The $1 a day standard, measured in 1985 international prices and adjusted to local currency using PPPs was chosen for the World Bank's World Development Report 1990. However, PPP rates were designed not for making international poverty comparisons but for comparing aggregates from national accounts.

However, the PPP conversion factor used for the Gambia is highly unrealistic. When used with the new data, this poverty line yields an estimate of the head-count index equal to 3.4 percent, again much too low to be meaningful.

Another attempt was done of using the official exchange rate of the Dalasi to reinterpret a poverty line equal to 1 $ a day per capita. Unfortunately, this official exchange rate has little meaning for welfare statistics, and using it yields an estimate of P_0 equal to 77.9 percent.

6.2.3. Imperfect poverty lines

Not correcting the calculus of the poverty line for the variation of nutritional needs across age and gender yields slightly higher poverty rates: 62.6 percent with the lower poverty line and 68.5 percent with the higher poverty line.

Even using only six products for constructing the poverty line (the four products finally kept, plus sardines and palm oil) lead to poverty rates close to 100 percent. Another common error is to use the calorie content of raw brown rice instead of that of cooked rice, which is much lower. This mistake would have led to much too low poverty rates, about 27 percent when using only rice as a basis for the poverty line.

Using only rice, while the correct calorie content of cooked rice, to calculate the food poverty line, is better but produces overestimation of poverty with 74 percent for the head-count index.

6.2.4. Food poverty and equivalence scales

With our food poverty line, our food poverty estimates are too high to be credible and we do not present them. It seems that the omission of own-consumption and gifts is the main reason for the overestimation of food poverty. Hopefully, the extrapolation based on the food demand equation helps us to redress the problem.

Using per adult-equivalent living standard based on nutritional equivalence scales instead of per capita living standard in the estimation of poverty estimates considerably

reduces the estimated poverty head-count indices: 39.7 percent with the lower poverty line and 46.3 percent with the higher poverty line.

The reliability of nutritionally-based adult-equivalent scales has often been attacked (e.g., Osmani, 1992). Because (1) the topics of how to define the equivalence scale is very contentious in economics, and (2) we would need additional IHS data to be cleaned to validate these equivalence scales (e.g. anthropometric data), we choose to base the present most poverty estimates on per capita consumption indicators. A full investigation of the equivalence scale issue should be carried out in the future to produce more accurate poverty analyses. Our imperfect solution has the advantage of yielding a method easier to communicate for the first set of poverty statistics based on accurate consumption data in the Gambia.

6.3. Regional poverty

Our poverty estimates across strata provide a more detailed picture of poverty in the country. In fact, as we shall explain, this picture is little accurate. Let us have a quick look at the head-count index per strata.

	P_0	Mean Paasche price index	Mean per capita consumption.
Banjul U	6.63 (4.0)	1.042	23,656 (1,666)
Kanifing U	32.1 (4.0)	1.035	11,450 (860)
Brikama U	41.9 (9.4)	1.137	8,503 (894)
Brikama R	50.0 (4.7)	1.073	8,850 (842)
Mansak. U	65.7 (12.7)	0.888	5,806 (1,131)
Mansak. R	55.9 (8.2)	0.824	9,007 (3,210)
Kerewan U	42.7 (10.3)	0.931	7,567 (1,338)
Kerewan R	67.0 (5.9)	0.918	5,796 (1,112)
Kuntaur U	57.1 (9.2)	0.897	5,302 (404)
Kuntaur R	91.9 (3.8)	0.886	3,026 (259)
Janjang. U	53.0 (22.1)	0.845	6,665 (1,773)
Janjang. R	62.9 (8.4)	0.900	5439 (5,030)
Basse U	44.3 (7.9)	0.952	9788 (1,250)
Basse R	63.2 (7.9)	0.904	6542 (1,284)

U = Urban ; R = Rural. Standard error in parentheses.

Poverty incidence is clearly much lower in Banjul than in the other strata which are all characterised by a large proportion of poor persons. Beyond Banjul, the smallest incidences of poverty are in Kaninfing (32.1 percent), Brikama Urban (41.9 percent), Kerewan Urban (42.7 percent) and Basse Urban (44.3 percent). The highest incidences of poverty are in Mansakonko Urban (65.7 percent), Kerewan Rural (67.0 percent),

Jangjangbureh Rural (62.9 percent), Basse Rural (63.2 percent) and especially Kuntaur Rural (91.9 percent). However, the differences in poverty incidence across strata should often be considered as statistical artefacts, as the large standard errors in parentheses show, except in the case of Banjul that stands clearly apart. The size of standard errors, and therefore of the corresponding confidence intervals are caused by small sub-sample sizes in some strata and by the presence of households with large observed consumption at the time of the survey. They invite the reader to be cautious and sceptical while comparing poverty estimates across strata. For example, it is found that in Mansakonko, the poverty estimates are lower for the rural areas than for the urban areas. The estimated standard error of the difference of P_0 between rural and urban Mansakonko shows that this difference is not significant at 5 percent level. In other strata, higher poverty rates are found in rural areas. On the whole, these results confirm the usual opinion that poverty in the Gambia is higher in rural areas.

However, the comparison of urban and rural areas in the Gambia is blurred by the definition of these areas that often correspond to arbitrary administrative limits that may have little reality on the ground. Indeed, some areas described as rural (as in Brikama) are now largely urbanised, and other ones described as urban (as in Mansakonko) are largely devoid of urban dwellings. This situation is worsened by the random selection of enumeration areas for the survey that has led to surveyed districts characterised by agglomerated dwellings in rural areas and surveyed districts containing few houses in otherwise officially urban areas. Clearly, there is a need for a new definition of urban and rural areas in the Gambia, perhaps based on the new spatial satellite data and the new census data.

The per capita mean consumption estimates for urban and rural areas for the same LGA show that in some cases higher per capita mean consumption has been found in rural areas, although again the differences between rural and urban estimates are often insignificant. This is the case in Brikama and Mansakonko, but not in Kerewan, Kuntaur, Janjangbureh and Basse, where per capita mean consumption is found higher in the urban part of the LGA.

There are price differences between areas that affect the differential of living standards between urban and rural areas. As our living standard indicators are based on deflated consumption values using these price indices, it is not illogical to find in some areas higher poverty, when basic products are more expensive there.

The calculus of the poverty line itself introduces a (relevant) difference of treatment between rural and urban areas. This is in part caused by the fact that the mean food basket necessary to reach a given nutritional minimum is more expensive in rural areas, possibly because of transport costs for imported food products reaching Banjul first. Indeed, food prices are higher in rural areas for rice, sugar and magi cube, but not for bread.

6.4. Poverty estimates for other sub-populations

Detailed results of poverty are provided in Tables 1 to 45 for the lower and upper poverty line and for subpopulations defined by the values of the variables: Domain, Rural/Urban, LGA, Strata, household size, various characteristics of the household head

(gender, ethnic group, marital status, marriage type, housing status, subjective poverty status, education, age, professional occupation, working industry). More cross-variables should be constructed to enrich the analyses on consumption, living standard and poverty.

We only briefly comment a few general features obtained with the upper poverty line. The results with the lower poverty line are in agreement, while with lower levels of poverty.

Urban areas have a much lower poverty rate (P_0 = 39.6 %) and much lower estimated poverty with P_1, P_2 and W, than rural areas (P_0 = 67.7 %). However, the incidence of poverty out of Banjul and Kanifing remains very substantial even in urban areas (P_0 = 56.0 %).

Households with female heads are characterised by higher poverty (P_0 = 60.3 % instead of P_0 = 40.7 % for households with male heads).

Not all ethnic groups are equally affected by poverty. The poorest groups, with any estimated poverty measure, are the Mandinka (P_0 = 67.3 %) and the Fula (P_0 = 66.3 %). The Wollof (P0 = 57.5%) and a mixed group ‘Others’ (P0 = 58.7 %) are also characterised by a majority of poor persons. The Jola, Sarahulled and Serer are generally much less affected by poverty.

Poverty is higher among households whose head are married (P_0 = 59.4 %) and lower among households whose head have never been married (P_0 = 31.8 %). The union type

also matters, with much higher poverty rates among households led by polygamous heads (P_0 = 68.3 %) than among households led by monogamous heads (P_0 = 49.9 %).

In terms of housing status, owners are less often poor (P_0 = 46.4 %) than tenants (P_0 = 64.6 %).

As expected, non-educated heads are more often poor (P_0 = 65.0 %) than heads with education (P_0 = 40.6 %).

The subjective perception of poverty does not correspond to its economic measure. If 71.2 % of households having declared themselves ‘very poor’ are indeed measured as poor based on their per capita living standards, only 45.3 % of those who declare themselves poor are economically poor in that sense. Moreover, 60.9 % of those who declare themselves non-poor have per capita living standards below the poverty line. These results indicate that subjective opinions about poverty should *not* be used as a substitute for measurement of poverty based on consumption surveys.

Larger households (i.e., with more members) have higher poverty, from P_0 = 13.3 % for households with three or less members, up to 71.1 % for households with 10 or more members. Note however, that this result is sensitive to the used adult-equivalent scale and would be attenuated when using equivalence scales allocating very small weight to children.

Poverty also increases with the age of the household head. Households led by young heads (below 30 years old) have lower poverty rates (39.5 %), while households led by elderly heads (50 year old or older) have very high poverty rates (64.6 %).

The occupation of the household head affects poverty, although less strongly than expected. This is probably due to an imperfect definition of the occupation variable (no code was used in the questionnaire for this variable). However, households whose head is peasant or agricultural worker, unskilled worker or unemployed are poorer (with respectively: P_0 = 79.3 %, 65.4 % and 62.6 %). On the contrary, households whose head works in services are less poor (P_0 = 31.6 %).

Similarly, the industry variable is not precisely defined in the questionnaire and should be corrected. However, the estimations results based on this variable show that households whose head is employed in the agricultural and fishing sector are poorer (P_0 = 76.3 %) than other households. This is also the case to a smaller extent for households whose head work in the construction sector (P_0 = 63.6 %). By contrast, households whose head works in social and personal services (P_0 = 45.3 %), in the sector ‘Trade, Hotels and Restaurants’ (P_0 = 48.7 %), and in Private and Public Financial Administrations (P_0 = 49.1 %) are less poor.

We finally, turn to the estimation of poverty for groundnut producers. The variable ‘groundnut producer’ is defined as 'household that has been observed at two consecutive seasons as producing groundnuts'. In practice in the sample this is almost the same as defining them as having been observed during one season only. That is: they are the people stating as an answer to a question that they were cultivating groundnut. Note that

this part of the data has not been fully checked. Moreover, one problem with the identification of groundnut producers in the survey file is that there are many missing values. We arbitrarily considered that these observations were equivalent to zero production. Then, our estimates should be considered as a preliminary attempt rather that a safe set of estimates.

Based on these definitions, poverty is much higher among groundnut producers (P_0 = 76.6 %) versus other households (P_0 = 46.2 %). These statistics are confirmed by the mean per capita living standard that is much lower for groundnut producers (5393 Dalasi per capita versus 10,269 Dalasis per capita for non-poducers). These features are robust to the separation of urban and rural areas. In urban areas, the incidence of poverty is higher for groundnut producers (P_0 = 63.9 %) than for non-producers (P_0 = 38.3 %). It is also the case for rural areas (respectively P_0 = 77.3 % and 55.2 %).

When turning the attention towards the respective situation of groundnut producers and groundnut non-producers for each LGA, we observe that, a part from Banjul where there is no observed groundnut producer, the mean per capita living standard is always lower, and the poverty rate is always higher (except for Kanifing for which the difference is not significant), for groundnut producers. Then, households producing geoundnut appear to form a destitute class all over the country without distinction of geographical location. One obvious question to investigate is if it is the mediocre return to groundnut production that pushed these households into poverty, or if it is poverty itself which confined these households to groundnut production, by restricting the access to other activities.

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Appendix 2: Results

A. Aggregate Results

Table 1: Poverty indicators at national level

Poverty Index	Estimate	Std. Err.
Head count	51.2	2.1
Poverty gap	20.9	1.3
Poverty severity	11.1	1.0
Watts Index	31.8	2.6

Note: Based on lower poverty line and per capita living standards

Table 2: Poverty indicators at national level

Poverty Index	Estimate	Std. Err.
Head Count	58.0	2.0
Poverty gap	25.1	1.4
Poverty severity	13.9	1.1
Watts Index	39.0	2.8

Note: Based on upper poverty line and per capita living standards

Table 3: Poverty indicators at national level

Poverty Index	Estimate	Std. Err.
Head Count	39.8	2.1
Poverty gap	14.6	1.2
Poverty severity	7.3	0.8
Watts Index	21.5	2.2

Note: Based on lower poverty line and per adult-equivalent living standards

Table 4: Poverty indicators at national level

Poverty Index	Estimate	Std. Err.
Head Count	46.4	2.1
Poverty gap	18.1	1.3
Poverty severity	9.4	0.9
Watts Index	27.2	2.4

Note: Based on upper poverty line and per adult-equivalent living standards

A. Results with the lower poverty line

Table 5: Poverty by area

Poverty	Area	Estimate	Std. Err.
Head count index	Urban	33.4	3.0
	Rural	60.6	2.8
Poverty gap	Urban	11.8	1.3
	Rural	25.7	1.9
Poverty severity	Urban	5.5	0.8
	Rural	14.1	1.5
Watts index	Urban	16..5	2.0
	Rural	39.9	3.8

Note: Based on the lower line

Table 6: Poverty by Local government area

poverty	LGA	Estimate	Std. Err.
Head count index	Banjul	6.6	4.0
	Kanifing	32.1	4.0
	Brikama	49.0	4.3
	Mansakonko	57.6	7.2
	Kerewan	63.6	5.4
	Kuntaur	90.0	3.8
	Janjangbureh	62.2	7.9
	Basse	61.1	7.0
Poverty gap	Banjul	1.5	0.9
	Kanifing	11.4	1.7
	Brikama	20.0	2.5
	Mansakonko	16.4	3.2
	Kerewan	30.5	4.6
	Kuntaur	45.0	3.8
	Janjangbureh	23.0	4.9
	Basse	23.2	4.8
Poverty severity	Banjul	0.5	0.3
	Kanifing	5.1	0.9
	Brikama	11.1	1.8
	Mansakonko	7.1	1.9
	Kerewan	18.2	4.1
	Kuntaur	25.2	3.0
	Janjangbureh	10.9	3.1
	Basse	11.6	3.4
Watts index	Banjul	1.9	1.1
	Kanifing	15.7	2.5
	Brikama	31.1	4.6
	Mansakonko	22.5	4.9
	Kerewan	51.5	11.0
	Kuntaur	67.5	6.9
	Janjangbureh	32.0	7.7
	Basse	34.1	8.6

Note: Based on the lower line

Table 7: Poverty by strata

Poverty	Strata	Estimate	Std. Err.
Head count index	*Banjul Urban*	6.6	4.0
	KMC urban	32.1	4.0
	Brikama Urban	41.9	9.4
	Brikama Rural	50.1	4.8
	Mansakonko Urban	65.8	12.8
	Mansakonko Rural	55.9	8.3
	Kerewan Urban	42.7	10.3
	Kerewan Rural	67.1	5.9
	Kuntaur Urban	57.1	9.2
	Kuntaur Rural	91.9	3.8
	Janjangbureh Urban	53.0	22.4
	Janjangbureh Rural	63.0	8.4
	Basse Urban	44.4	7.9
	Basse Rural	63.3	8.0
Poverty gap	*Banjul Urban*	1.5	0.9
	KMC urban	11.4	1.7
	Brikama Urban	16.2	4.7
	Brikama Rural	20.6	2.8
	Mansakonko Urban	29.6	8.4
	Mansakonko Rural	13.6	3.3
	Kerewan Urban	16.5	6.5
	Kerewan Rural	32.8	5.2
	Kuntaur Urban	21.6	5.6
	Kuntaur Rural	46.4	4.0
	Janjangbureh Urban	12.5	5.7
	Janjangbureh Rural	23.8	5.3
	Basse Urban	7.9	3.0
	Basse Rural	25.2	5.6
Poverty severity	*Banjul Urban*	0.5	0.3
	KMC urban	5.1	0.9
	Brikama Urban	8.2	3.0
	Brikama Rural	11.5	2.0
	Mansakonko Urban	17.6	5.4
	Mansakonko Rural	5.0	1.9
	Kerewan Urban	8.0	4.7
	Kerewan Rural	19.9	4.6
	Kuntaur Urban	10.6	3.3
	Kuntaur Rural	26.1	3.1
	Janjangbureh Urban	3.3	1.5
	Janjangbureh Rural	11.4	3.3
	Basse Urban	3.2	1.6
	Basse Rural	12.7	3.9
Watts index	*Banjul Urban*	1.9	1.1
	KMC urban	15.7	2.5
	Brikama Urban	23.7	7.8
	Brikama Rural	32.2	5.2
	Mansakonko Urban	47.4	14.4
	Mansakonko Rural	17.3	4.9

	Kerewan Urban	23.8	11.5
	Kerewan Rural	56.1	12.6
	Kuntaur Urban	30.3	8.4
	Kuntaur Rural	69.7	7.2
	Janjangbureh Urban	14.5	6.6
	Janjangbureh Rural	33.4	8.4
	Basse Urban	10.5	4.3
	Basse Rural	37.2	9.9

Note: Based on the lower line

Table 8: Poverty by domain

Poverty	Domains	Estimate	Std. Err.
Head count index	Banjul+ Kanifing	29.1	3.6
	Other urban	45.9	5.1
	Rural	60.6	2.8
Poverty gap	Banjul+ Kanifing	10.2	1.5
	Other urban	16.2	2.7
	Rural	25.7	1.9
Poverty severity	Banjul+ Kanifing	4.6	0.8
	Other urban	8.0	1.8
	Rural	14.1	1.5
Watts index	Banjul+ Kanifing	14.1	2.2
	Other urban	23.6	4.6
	Rural	39.9	3.8

Note: Based on the lower line

Table 9: Poverty by area

Poverty	Area	Estimate	Std. Err.
Head count index	Urban	39.6	3.1
	Rural	67.8	2.6
9Poverty gap	Urban	14.8	1.5
	Rural	30.5	2.0
Poverty severity	Urban	7.3	0.9
	Rural	17.4	1.6
Watts index	Urban	21.4	2.4
	Rural	48.4	4.1

Note: Based on the upper line

Table 10: Poverty by gender of the household head

Poverty	Gender	Estimate	Std. Err.
Head count index	Male	34.8	3.4
	Female	53.5	2.2
Poverty gap	Male	11.6	1.5
	Female	22.2	1.5
Poverty severity	Male	5.3	0.9
	Female	11.9	1.1
Watts index	Male	16.1	2.3
	Female	34.0	2.9

Note: Based on lower poverty line

Table 11: Poverty by ethnicity of the household head

Poverty	Ethnicity	Estimate	Std. Err.
Head count index	Mandinka	59.8	3.4
	Fula	55.6	4.3
	Wollof	51.3	3.3
	Jola	33.3	4.3
	Sarahulleh	34.6	7.8
	Sererr	34.5	6.6
	Others	52.4	4.6
Poverty gap	Mandinka	25.3	2.5
	Fula	21.7	2.7
	Wollof	19.5	1.8
	Jola	13.9	2.4
	Sarahulleh	11.3	3.2
	Sererr	9.1	2.0
	Others	25.4	3.4
Poverty severity	Mandinka	13.7	1.9
	Fula	10.8	2.0
	Wollof	10.0	1.2
	Jola	7.5	1.8
	Sarahulleh	4.8	2.1
	Sererr	3.1	0.7
	Others	14.9	2.7
Watts index	Mandinka	39.0	4.9
	Fula	31.4	5.1
	Wollof	29.0	3.1
	Jola	21.6	4.7
	Sarahulleh	15.4	5.2
	Sererr	11.4	2.4
	Others	40.8	7.0

Note: Based on lower poverty line

Table 12: Poverty by age of the household head

Poverty index	Age group	Estimate	Std. Err.
Head count index	15-29	35.0	4.9
	30-39	42.8	3.3
	40-49	47.1	2.9
	50+	57.4	2.8
Poverty gap	15-29	12.7	2.7
	30-39	17.1	1.9
	40-49	18.7	1.6
	50+	23.9	1.8
Poverty severity	15-29	6.8	2.0
	30-39	8.9	1.3
	40-49	9.8	1.1
	50+	12.8	1.4
Watt's index	15-29	19.5	5.0
	30-39	25.4	3.3
	40-49	28.0	3.0
	50+	36.7	3.7

Note: Based on lower poverty line

Table 13: Poverty by occupation of the household head

Occupation	Occupation	Estimate	Std. Err.
Head count index	Highly qualified white collared	36.8	5.5
	Median qualified white collared	40.9	6.2
	Service and sales worker	27.8	4.7
	Peasant agric. Worker	68.3	7.2
	Craft & related trade worker	51.9	5.2
	Unqualified worker	58.2	3.0
	Unemployed	54.6	4.6
	Inactive	38.8	6.6
	Not stated	41.7	6.0
Poverty gap	Highly qualified white collared	14.4	2.6
	Median qualified white collared	16.4	3.7
	Service and sales worker	9.2	2.2
	Peasant agric. Worker	29.9	4.2
	Craft & related trade worker	21.0	2.8
	Unqualified worker	24.3	1.9
	Unemployed	20.1	3.0
	Inactive	17.4	3.8
	Not stated	18.0	3.5
Poverty severity	Highly qualified white collared	8.0	1.8
	Median qualified white collared	9.1	3.1
	Service and sales worker	4.9	1.5
	Peasant agric. Worker	15.9	2.9
	Craft & related trade worker	10.8	1.8
	Unqualified worker	12.9	1.4
	Unemployed	10.1	2.2
	Inactive	10.0	2.8
	Not stated	10.1	2.6

Watt's index	Highly qualified white collared	22.5	4.6
	Median qualified white collared	27.9	9.4
	Service and sales worker	13.7	3.7
	Peasant agric. Worker	45.0	7.5
	Craft & related trade worker	30.6	4.5
	Unqualified worker	36.5	3.6
	Unemployed	29.6	5.6
	Inactive	30.1	8.3
	Not stated	28.2	6.5

Note: Based on lower poverty line

Table 14: Poverty by working industry of the household head

Poverty index	Industry	Estimate	Std. Err.
Head count index	Agriculture and fishing	68.5	3.4
	Manufacturing and energy	43.5	6.5
	Construction	57.8	6.5
	Trade, hotels and restaurants	41.7	4.1
	Transport and communication	44.9	6.3
	Private and public financial admn.	45.4	6.2
	Social and personal service	39.8	4.1
	Not stated	46.5	3.4
Poverty gap	Agriculture and fishing	29.1	2.3
	Manufacturing and energy	19.4	4.0
	Construction	27.8	4.2
	Trade, hotels and restaurants	13.5	1.8
	Transport and communication	21.6	4.1
	Private and public financial admn.	21.0	3.6
	Social and personal service	15.7	2.5
	Not stated	17.9	1.9
Poverty severity	Agriculture and fishing	15.5	1.8
	Manufacturing and energy	10.9	2.8
	Construction	15.6	3.0
	Trade, hotels and restaurants	6.1	1.0
	Transport and communication	12.7	2.9
	Private and public financial admn.	11.8	2.4
	Social and personal service	9.0	1.9
	Not stated	9.1	1.3
Watt's index	Agriculture and fishing	43.8	4.6
	Manufacturing and energy	30.5	7.3
	Construction	42.2	7.2
	Trade, hotels and restaurants	18.6	2.7
	Transport and communication	34.0	7.2
	Private and public financial admn.	32.6	6.2
	Social and personal service	25.9	5.3
	Not stated	27.1	3.6

Note: Based on lower poverty line

Table 15: Poverty by marital status of the household head

Poverty	Marital status	Estimate	Std. Err.
Head count index	Never married	29.0	9.3
	Married	52.4	2.2
	Divorced/Separated	42.3	6.8
	Widowed	36.7	5.6
Poverty gap	Never married	10.1	3.0
	Married	21.5	1.4
	Divorced/Separated	17.6	3.1
	Widowed	11.8	2.3
Poverty severity	Never married	4.5	1.7
	Married	11.5	1.1
	Divorced/Separated	8.8	1.8
	Widowed	5.3	1.2
Watts index	Never married	14.0	4.5
	Married	32.9	2.8
	Divorced/Separated	25.1	4.6
	Widowed	16.0	3.3

Note: Based on lower poverty line

Table 16: Poverty by marriage type of the household head

Poverty	Union type	Estimate	Std. Err.
Head count index	Monogamous	43.1	2.5
	Polygamous	61.4	3.0
	Not married	35.5	7.4
Poverty gap	Monogamous	16.9	1.6
	Polygamous	25.7	2.0
	Not married	15.9	3.5
Poverty severity	Monogamous	9.1	1.2
	Polygamous	13.5	1.4
	Not married	8.2	2.0
Watts index	Monogamous	26.3	3.3
	Polygamous	38.6	3.7
	Not married	22.9	5.2

Note: Based on lower poverty line

Table 17: Poverty by housing status of the household head

Poverty	Housing status	Estimate	Std. Err.
Head count index	Owning	37.1	5.5
	Renting	57.4	2.4
	Provided rent free	23.0	2.7
Poverty gap	Owning	15.1	2.6
	Renting	23.8	1.6
	Provided rent free	7.1	1.0
Poverty severity	Owning	7.6	1.6
	Renting	12.8	1.2
	Provided rent free	3.1	0.5
Watts index	Owning	22.3	4.3
	Renting	36.4	3.2
	Provided rent free	9.7	1.5

Note: Based on lower poverty line

Table 18: Poverty by subjective poverty status of the household head

Poverty	Poverty status	Estimate	Std. Err.
Head count index	Extremely poor	64.6	4.8
	Poor	40.9	4.5
	Non poor	53.4	2.3
Poverty gap	Extremely poor	26.6	2.8
	Poor	17.8	2.8
	Non poor	21.5	1.5
Poverty severity	Extremely poor	14.0	1.9
	Poor	10.1	2.1
	Non poor	11.3	1.1
Watts index	Extremely poor	39.5	4.7
	Poor	28.2	5.3
	Non poor	32.7	2.8

Note: Based on lower poverty line

Table 19: Poverty by education of the household head

Poverty	Education	Estimate	Std. Err.
Head count index	No education	58.2	2.4
	Education	33.8	3.8
Poverty gap	No education	24.0	1.6
	Education	13.3	1.9
Poverty severity	No education	12.7	1.2
	Education	7.1	1.2
Watts index	No education	36.3	3.0
	Education	20.7	3.5

Note: Based on lower poverty line

Table 20: Poverty by literacy status of the household head

Poverty	Literacy status	Estimate	Std. Err.
Head count index	Non-literate	59.1	…
	Literate	28.7	…
Poverty gap	Non-literate	24.6	…
	Literate	10.6	…
Poverty severity	Non-literate	12.9	…
	Literate	5.2	…
Watts index	Non-literate	37.0	…
	Literate	15.3	…

Note: Based on lower poverty line
:… - Missing SE due to stratum with single sampling unit

C. Results with the upper poverty line

Table 21: Poverty by Local Government Area (LGA)

Poverty	LGA	Estimate	Std. Err.
Head count index	Banjul	7.6	4.8
	Kanifing	37.6	4.1
	Brikama	56.7	4.1
	Mansakonko	62.6	6.9
	Kerewan	69.8	4.8
	Kuntaur	94.9	2.0
	Janjangbureh	75.7	6.0
	Basse	67.9	6.6
Poverty gap	Banjul	2.2	1.2
	Kanifing	14.1	1.9
	Brikama	24.2	2.7
	Mansakonko	21.9	3.6
	Kerewan	35.1	4.6
	Kuntaur	50.9	3.6
	Janjangbureh	29.0	5.0
	Basse	28.4	5.0
Poverty severity	Banjul	0.8	0.5
	Kanifing	6.8	1.1
	Brikama	13.7	1.9
	Mansakonko	10.0	2.2
	Kerewan	21.6	4.2
	Kuntaur	30.5	3.1
	Janjangbureh	14.4	3.5
	Basse	15.0	3.7
Watts index	Banjul	2.7	1.5
	Kanifing	20.0	2.9
	Brikama	38.2	5.1
	Mansakonko	30.6	5.7
	Kerewan	60.5	11.5
	Kuntaur	79.6	7.1
	Janjangbureh	41.4	8.4
	Basse	42.7	9.3

Note: Based on the upper line

Table 22: Poverty by strata

Poverty	Strata	Estimate	Std. Err.
Head count index	*Banjul Urban*	7.6	4.8
	KMC urban	37.6	4.1
	Brikama Urban	53.6	8.8
	Brikama Rural	57.1	4.5
	Mansakonko Urban	75.7	7.3
	Mansakonko Rural	59.9	8.1
	Kerewan Urban	50.7	11.2
	Kerewan Rural	73.0	5.1
	Kuntaur Urban	64.4	6.3
	Kuntaur Rural	96.7	2.0
	Janjangbureh Urban	67.5	17.8
	Janjangbureh Rural	76.3	6.4
	Basse Urban	52.2	9.7
	Basse Rural	70.0	7.6
Poverty gap	*Banjul Urban*	2.2	1.2
	KMC urban	14.1	1.9
	Brikama Urban	20.7	5.3
	Brikama Rural	24.7	3.0
	Mansakonko Urban	35.2	8.6
	Mansakonko Rural	19.1	3.8
	Kerewan Urban	20.7	6.9
	Kerewan Rural	37.5	5.1
	Kuntaur Urban	26.8	5.8
	Kuntaur Rural	52.3	3.7
	Janjangbureh Urban	19.1	7.8
	Janjangbureh Rural	29.7	5.3
	Basse Urban	13.6	3.2
	Basse Rural	30.4	5.8
Poverty severity	*Banjul Urban*	0.8	0.5
	KMC urban	6.8	1.1
	Brikama Urban	10.9	3.5
	Brikama Rural	14.1	2.2
	Mansakonko Urban	21.4	6.2
	Mansakonko Rural	7.6	2.2
	Kerewan Urban	10.7	5.2
	Kerewan Rural	23.5	4.7
	Kuntaur Urban	14.1	3.9
	Kuntaur Rural	31.5	3.3
	Janjangbureh Urban	6.5	2.9
	Janjangbureh Rural	15.0	3.8
	Basse Urban	5.1	1.9
	Basse Rural	16.2	4.3
Watts index	*Banjul Urban*	2.7	1.5
	KMC urban	20.0	2.9
	Brikama Urban	31.0	9.0
	Brikama Rural	39.3	5.6
	Mansakonko Urban	57.8	15.8
	Mansakonko Rural	24.9	5.8
	Kerewan Urban	30.8	12.8
	Kerewan Rural	65.4	13.1
	Kuntaur Urban	39.1	9.4

	Kuntaur Rural	82.0	7.4
	Janjangbureh Urban	23.5	9.7
	Janjangbureh Rural	42.8	9.1
	Basse Urban	17.8	4.9
	Basse Rural	45.9	10.8

Note: Based on the upper line%

Table 23: Poverty by domain

Poverty	Domain	Estimate	Std. Err.
Head count index	Banjul+ Kanifing	34.0	3.7
	Other urban	56.0	5.0
	Rural	67.8	2.6
Poverty gap	Banjul+ Kanifing	12.7	1.7
	Other urban	21.1	3.0
	Rural	30.5	2.0
Poverty severity	Banjul+ Kanifing	6.1	1.0
	Other urban	10.8	2.0
	Rural	17.4	1.6
Watts index	Banjul+ Kanifing	18.0	2.6
	Other urban	31.2	5.2
	Rural	48.4	4.1

Note: Based on the upper line

Table 24: Poverty by gender of the household head

Poverty	Gender	Estimate	Std. Err.
Head count index	Male	40.7	3.8
	Female	60.5	2.0
Poverty gap	Male	14.8	1.7
	Female	26.5	1.5
Poverty severity	Male	7.1	1.0
	Female	14.8	1.2
Watts index	Male	21.1	2.7
	Female	41.5	3.1

Note: Based on upper poverty line

Table 25: Poverty by ethnicity of the household head

Poverty	Ethnicity	Estimate	Std. Err.
Head count index	Mandinka	67.3	3.0
	Fula	66.4	3.5
	Wollof	57.5	3.2
	Jola	36.5	5.2
	Sarahulleh	43.0	8.6
	Sererr	41.1	4.8
	Others	58.7	4.4
Poverty gap	Mandinka	30.2	2.5
	Fula	26.4	2.7
	Wollof	23.9	1.9
	Jola	16.5	2.6
	Sarahulleh	14.7	3.5
	Sererr	12.5	2.4
	Others	29.2	3.4
Poverty severity	Mandinka	17.0	2.0
	Fula	13.8	2.2
	Wollof	12.7	1.3
	Jola	9.3	1.9
	Sarahulleh	6.7	2.3
	Sererr	4.9	1.0
	Others	17.7	2.8
Watts index	Mandinka	47.5	5.2
	Fula	39.3	5.4
	Wollof	36.2	3.4
	Jola	26.3	5.1
	Sarahulleh	20.6	5.7
	Sererr	16.2	3.1
	Others	48.2	7.4

Note: Based on upper poverty line

Table 26: Poverty by marital status of the household head

Poverty	Marital status	Estimate	Std. Err.
Head count index	Never married	31.9	9.4
	Married	59.4	2.1
	Divorced/Separated	46.6	6.7
	Widowed	43.4	5.9
Poverty gap	Never married	12.6	3.7
	Married	25.8	1.5
	Divorced/Separated	20.8	3.5
	Widowed	15.3	2.6
Poverty severity	Never married	6.1	2.0
	Married	14.3	1.1
	Divorced/Separated	11.2	2.1
	Widowed	7.2	1.5
Watts index	Never married	18.0	5.4
	Married	40.3	3.0
	Divorced/Separated	30.8	5.3
	Widowed	21.3	3.9

Note: Based on upper poverty line

Table 27: Poverty by union type of the household head

Poverty	Union type	Estimate	Std. Err.
Head count index	Monogamous	49.9	2.4
	Polygamous	68.4	2.7
	Not married	41.4	6.8
Poverty gap	Monogamous	20.6	1.6
	Polygamous	30.6	2.0
	Not married	18.6	3.8
Poverty severity	Monogamous	11.4	1.3
	Polygamous	16.9	1.6
	Not married	10.3	2.4
Watts index	Monogamous	32.4	3.6
	Polygamous	47.2	4.0
	Not married	27.8	6.0

Note: Based on upper poverty line

Table 28: Poverty by housing status of the household head

Poverty	Housing status	Estimate	Std. Err.
Head count index	Owning	46.4	5.2
	Renting	64.6	2.2
	Provided rent free	26.9	2.7
Poverty gap	Owning	18.4	2.9
	Renting	28.4	1.6
	Provided rent free	9.4	1.2
Poverty severity	Owning	9.7	1.8
	Renting	15.9	1.3
	Provided rent free	4.3	0.7
Watt's index	Owning	27.8	4.8
	Renting	44.5	3.4
	Provided rent free	13.0	1.8

Note: Based on upper poverty line

Table 29: Poverty by subjective poverty status of the household head

Poverty	Poverty status	Estimate	Std. Err.
Head count index	Extremely poor	71.3	4.3
	Poor	45.3	4.3
	Non poor	60.9	2.1
Poverty gap	Extremely poor	31.8	3.0
	Poor	20.9	3.0
	Non poor	26.0	1.5
Poverty severity	Extremely poor	17.5	2.1
	Poor	12.3	2.3
	Non poor	14.2	1.2
Watt's index	Extremely poor	48.5	5.2
	Poor	33.8	5.8
	Non poor	40.3	3.0

Note: Based on upper poverty line

Table 30: Poverty by education of the household head

Poverty	Education	Estimate	Std. Err.
Head count index	No education	65.1	2.1
	Education	40.6	3.7
Poverty gap	No education	28.7	1.6
	Education	16.2	2.1
Poverty severity	No education	15.9	1.3
	Education	8.9	1.4
Watt's index	No education	44.5	3.3
	Education	25.6	3.8

Note: Based on upper poverty line

Table 31: Poverty by household size

Poverty index	Household size	Estimate	Std. Err.
Head count index	1-3	10.7	2.0
	4-6	28.0	2.6
	7-9	43.2	3.0
	10+	64.1	2.8
Poverty gap	1-3	3.7	0.8
	4-6	8.7	1.0
	7-9	15.0	1.4
	10+	27.9	1.9
Poverty severity	1-3	1.7	0.4
	4-6	3.9	0.5
	7-9	7.1	0.9
	10+	15.4	1.5
Watt’s index	1-3	5.1	1.2
	4-6	12.2	1.6
	7-9	21.4	2.4
	10+	43.3	3.8

Note: Based on lower poverty line

Table 32: Poverty by household size

Poverty index	Household size	Estimate	Std. Err.
Head count index	1-3	13.3	2.2
	4-6	35.2	2.7
	7-9	50.0	3.0
	10+	71.1	2.5
Poverty gap	1-3	4.7	0.9
	4-6	11.5	1.2
	7-9	18.9	1.5
	10+	32.9	1.9
Poverty severity	1-3	2.3	0.5
	4-6	5.3	0.7
	7-9	9.4	1.0
	10+	18.9	1.6
Watt's index	1-3	6.7	1.4
	4-6	16.3	1.8
	7-9	27.6	2.7
	10+	52.3	4.0

Note: Based on upper poverty line

Table 33: Poverty by age of the household head

Poverty index	Age	Estimate	Std. Err.
Head count index	15-29	39.5	4.9
	30-39	50.3	3.2
	40-49	53.2	2.9
	50+	64.6	2.5
Poverty gap	15-29	15.7	2.8
	30-39	20.7	2.0
	40-49	22.7	1.7
	50+	28.5	1.9
Poverty severity	15-29	8.5	2.1
	30-39	11.2	1.4
	40-49	12.4	1.3
	50+	15.9	1.5
Watt's index	15-29	24.3	5.5
	30-39	31.5	3.6
	40-49	34.8	3.2
	50+	44.8	4.0

Note: Upper poverty line

Table 34: Poverty by occupation of the household head

Poverty index	Occupation	Estimate	Std. Err.
Head count index	Highly qualified white collared	43.8	5.4
	Median qualified white collared	51.7	6.1
	Service and sales worker	31.6	5.0
	Peasant agric. Worker	73.4	6.5
	Craft & related trade worker	57.7	5.1
	Unqualified worker	65.5	2.5
	Unemployed	64.6	4.1
	Inactive	42.3	6.7
	Not stated	44.0	6.1
Poverty gap	Highly qualified white collared	17.6	2.8
	Median qualified white collared	20.2	3.7
	Service and sales worker	11.8	2.4
	Peasant agric. Worker	35.0	4.4
	Craft & related trade worker	25.2	3.0
	Unqualified worker	29.1	1.9
	Unemployed	24.9	3.1
	Inactive	20.3	4.0
	Not stated	21.1	3.7
Poverty severity	Highly qualified white collared	9.9	2.0
	Median qualified white collared	11.2	3.2
	Service and sales worker	6.2	1.7
	Peasant agric. Worker	19.7	3.2
	Craft & related trade worker	13.6	2.0
	Unqualified worker	16.1	1.5
	Unemployed	13.0	2.4
	Inactive	12.0	3.0
	Not stated	12.3	2.8
Watt's index	Highly qualified white collared	27.8	5.1
	Median qualified white collared	34.1	9.9
	Service and sales worker	17.7	4.1
	Peasant agric. Worker	54.4	8.1
	Craft & related trade worker	37.9	5.0
	Unqualified worker	44.8	3.9
	Unemployed	37.4	6.0
	Inactive	35.5	8.9
	Not stated	33.9	7.1

Note: Upper poverty line

Table 35: Poverty by working industry of the household head

Poverty index	Industry	Estimate	Std. Err.
Head count index	Agriculture and fishing	76.4	2.7
	Manufacturing and energy	50.0	6.4
	Construction	63.6	6.6
	Trade, hotels and restaurants	48.8	4.1
	Transport and communication	52.4	6.2
	Private and public financial admn.	49.2	6.2
	Social and personal service	45.4	4.4
	Not stated	53.5	3.3
Poverty gap	Agriculture and fishing	34.5	2.3
	Manufacturing and energy	22.7	4.1
	Construction	32.0	4.2
	Trade, hotels and restaurants	17.6	2.0
	Transport and communication	24.9	4.2
	Private and public financial admn.	24.2	3.9
	Social and personal service	19.1	2.6
	Not stated	21.8	2.0
Poverty severity	Agriculture and fishing	19.3	1.9
	Manufacturing and energy	13.3	3.1
	Construction	18.9	3.2
	Trade, hotels and restaurants	8.3	1.2
	Transport and communication	15.1	3.2
	Private and public financial admn.	14.4	2.7
	Social and personal service	11.0	2.1
	Not stated	11.6	1.5
Watt's index	Agriculture and fishing	53.5	4.9
	Manufacturing and energy	36.6	7.9
	Construction	50.4	7.8
	Trade, hotels and restaurants	24.6	3.1
	Transport and communication	40.4	7.9
	Private and public financial admn.	38.9	6.9
	Social and personal service	31.6	5.7
	Not stated	33.6	3.9

Note: Upper poverty line

D: Preliminary results for groundnut producers

Table 36: Percentage distribution of groundnut & non-producers

Producer	Estimate
Groundnut producers	28.0
Non-Groundnut producers	72.0
All Producers	100.0

Note: Figures are in percentage

Table 37: Mean per capita living standard by producers and non-producers of groundnut, and by area

Producers	Area	Estimate	Std. Err.
Groundnut producers	***Urban***	7,862	1861
	Rural	5,260	335
Non-Groundnut producers	***Urban***	11,478	617
	Rural	9,241	902

Note: Figures are in Dalasis

Table 38: Mean per capita living standard by producer & non-producer of groundnut

Producer	Estimate	Std. Err.
Groundnut producers	5,393	339
Non-Groundnut producers	10,269	520

Note: Figures are in dalasis

Table 39: Poverty indicators by producer & non-producer of groundnut

Poverty Indices	Producer	Estimate	Std. Err.
Head count	**Groundnut producers**	68.3	3.2
	Non-Groundnut producers	40.5	2.5
Poverty gap	**Groundnut producers**	29.5	2.3
	Non-Groundnut producers	15.6	1.3
Poverty severity	**Groundnut producers**	16.0	1.7
	Non-Groundnut producers	8.1	0.9
Watts index	**Groundnut producers**	44.9	4.3
	Non-Groundnut producers	23.8	2.5

Note: Based on lower poverty line
: Figures are in percentage

Table 40: Poverty indicators by producer & non-producer of groundnut

Poverty Indices	Producer	Estimate	Std. Err.
Head count	**Groundnut producers**	76.6	2.7
	Non-Groundnut producers	46.2	2.5
Poverty gap	**Groundnut producers**	35.0	2.3
	Non-Groundnut producers	19.0	1.4
Poverty severity	**Groundnut producers**	19.8	1.9
	Non-Groundnut producers	10.3	1.0
Watts index	**Groundnut producers**	54.6	4.6
	Non-Groundnut producers	29.4	2.7

Note: Based on upper poverty line
: Figures are in percentage

Table 41: Mean per capita living standard by producer and non-producer of groundnut and LGA

Producer	LGA	Estimate	Std. Err.
Groundnut producers	***Kanifing***	13,169	4,737
	Brikama	5,490	471
	Mansakonko	5,825	447
	Kerewan	4,851	521
	Kuntaur	3,391	309
	Janjangbureh	5,265	607
	Basse	6,316	876
Non-Groundnut producers	***Banjul***	22,086	2,730
	Kanifing	11,067	777
	Brikama	8,875	811
	Mansakonko	12,085	4,818
	Kerewan	9,096	2,142
	Kuntaur	4,309	889
	Janjangbureh	6,558	1,059
	Basse	11,009	1,595

Note: Figures are in dalasis

Table 42: Poverty indicators by producer and non-producer of groundnut and LGA

Poverty indices	Producer	LGA	Estimate	Std. Err.
Head count	**Groundnut producers**	***Kanifing***	34.6	19.6
		Brikama	58.8	7.3
		Mansakonko	68.9	7.9
		Kerewan	72.4	5.0
		Kuntaur	92.1	4.0
		Janjangbureh	62.5	7.9
		Basse	64.3	7.7
	Non-Groundnut producers	***Banjul***	6.6	4.0
		Kanifing	32.1	4.0
		Brikama	46.0	4.7
		Mansakonko	52.3	8.1
		Kerewan	47.8	7.6
		Kuntaur	81.2	8.2
		Janjangbureh	61.5	13.7
		Basse	41.2	8.1
Poverty gap	**Groundnut producers**	***Kanifing***	11.9	8.3
		Brikama	24.4	4.7
		Mansakonko	18.0	3.6
		Kerewan	35.3	4.4
		Kuntaur	46.4	4.1
		Janjangbureh	24.3	5.3
		Basse	25.6	5.5
	Non-Groundnut producers	***Banjul***	1.5	0.9
		Kanifing	11.4	1.7
		Brikama	18.7	2.7
		Mansakonko	16.0	4.8
		Kerewan	22.2	5.5
		Kuntaur	45.7	7.5
		Janjangbureh	19.0	5.3
		Basse	8.4	3.1
Poverty severity	**Groundnut producers**	***Kanifing***	5.7	4.4
		Brikama	13.8	3.6
		Mansakonko	7.3	2.2
		Kerewan	20.6	3.9
		Kuntaur	26.0	3.2
		Janjangbureh	11.7	3.4
		Basse	12.9	3.9
	Non-Groundnut producers	***Banjul***	0.5	0.3
		Kanifing	5.1	0.9
		Brikama	10.3	1.8
		Mansakonko	7.1	3.1
		Kerewan	13.9	4.7
		Kuntaur	28.6	5.8
		Janjangbureh	8.0	3.1
		Basse	3.6	1.8

Watts index	**Groundnut producers**	***Kanifing***	16.4	11.8
		Brikama	38.8	9.1
		Mansakonko	23.8	5.4
		Kerewan	56.9	9.8
		Kuntaur	69.5	7.3
		Janjangbureh	34.1	8.4
		Basse	37.7	9.9
	Non-Groundnut producers	***Banjul***	1.9	1.1
		Kanifing	15.7	2.5
		Brikama	28.9	4.8
		Mansakonko	22.4	7.8
		Kerewan	41.3	13.8
		Kuntaur	73.1	13.5
		Janjangbureh	25.5	7.9
		Basse	11.3	4.6

Note: Based on lower poverty line
: Figures are in percentage

Table 43: Poverty indicators by producer and non-producer of groundnut and LGA

Poverty indices	Producer	LGA	Estimate	Std. Err.
Head count	**Groundnut producers**	***Kanifing***	34.6	19.6
		Brikama	70.4	5.2
		Mansakonko	74.5	7.4
		Kerewan	77.8	4.5
		Kuntaur	96.7	2.0
		Janjangbureh	78.2	6.1
		Basse	71.2	7.5
	Non-Groundnut producers	***Banjul***	7.6	4.8
		Kanifing	37.7	4.0
		Brikama	52.4	4.6
		Mansakonko	56.2	8.3
		Kerewan	54.8	7.2
		Kuntaur	84.7	6.5
		Janjangbureh	70.1	12.9
		Basse	46.7	9.6
Poverty gap	**Groundnut producers**	***Kanifing***	14.6	9.4
		Brikama	29.6	4.7
		Mansakonko	24.9	3.9
		Kerewan	40.3	4.3
		Kuntaur	52.3	3.8
		Janjangbureh	30.4	5.3
		Basse	30.8	5.7
	Non-Groundnut producers	***Banjul***	2.2	1.2
		Kanifing	14.1	1.9
		Brikama	22.5	2.9
		Mansakonko	20.7	5.2
		Kerewan	25.9	5.6
		Kuntaur	50.4	7.3
		Janjangbureh	24.9	6.0
		Basse	13.3	3.3
Poverty severity	**Groundnut producers**	***Kanifing***	7.4	5.3
		Brikama	16.9	3.8
		Mansakonko	10.7	2.5
		Kerewan	24.7	4.0
		Kuntaur	31.4	3.4
		Janjangbureh	15.4	3.8
		Basse	16.5	4.3
	Non-Groundnut producers	***Banjul***	0.8	0.5
		Kanifing	6.8	1.1
		Brikama	12.7	2.0
		Mansakonko	9.8	3.5
		Kerewan	16.3	4.8
		Kuntaur	33.2	6.1
		Janjangbureh	11.4	3.6
		Basse	5.5	2.1
Watts index	**Groundnut producers**	***Kanifing***	20.8	13.9

	Brikama	47.6	9.7
	Mansakonko	33.6	6.2
	Kerewan	67.0	10.2
	Kuntaur	81.9	7.6
	Janjangbureh	43.7	9.1
	Basse	46.6	10.7
Non-Groundnut producers	***Banjul***	2.7	1.5
	Kanifing	20.0	2.9
	Brikama	35.5	5.3
	Mansakonko	29.5	8.8
	Kerewan	48.2	14.5
	Kuntaur	84.3	14.3
	Janjangbureh	34.3	9.1
	Basse	17.8	5.1

Note: Based on upper poverty line
: Figures are in percentage

Table 44: Poverty indicators by producers and non-producers of groundnut and area

Poverty indices	Producers	Area	Estimate	Std. Err.
Head count	**Groundnut producers**	***Urban***	56.9	8.3
		Rural	68.9	3.3
	Non-Groundnut producers	***Urban***	32.1	3.1
		Rural	50.0	4.0
Poverty gap	**Groundnut producers**	***Urban***	23.5	4.9
		Rural	29.8	2.4
	Non-Groundnut producers	***Urban***	11.0	1.3
		Rural	20.7	2.4
Poverty severity	**Groundnut producers**	***Urban***	12.9	3.8
		Rural	16.1	1.8
	Non-Groundnut producers	***Urban***	5.0	0.7
		Rural	11.7	1.8
Watts index	**Groundnut producers**	***Urban***	36.2	9.3
		Rural	45.3	4.5
	Non-Groundnut producers	***Urban***	15.3	1.9
		Rural	33.4	4.9

Note: Based on lower poverty line
: Figures are in percentage

Table 45: Poverty indicators by producers and non-producers of groundnut and area

Poverty indices	Producers	Area	Estimate	Std. Err.
Head count	**Groundnut producers**	***Urban***	63.9	8.9
		Rural	77.3	2.9
	Non-Groundnut producers	***Urban***	38.3	3.1
		Rural	55.3	3.9
Poverty gap	**Groundnut producers**	***Urban***	28.8	5.1
		Rural	35.3	2.4
	Non-Groundnut producers	***Urban***	14.0	1.5
		Rural	24.6	2.6
Poverty severity	**Groundnut producers**	***Urban***	16.3	4.0
		Rural	20.0	1.9
	Non-Groundnut producers	***Urban***	6.8	0.9
		Rural	14.3	1.9
Watts index	**Groundnut producers**	***Urban***	45.3	10.0
		Rural	55.1	4.8
	Non-Groundnut producers	***Urban***	19.9	2.3
		Rural	40.3	5.3

Note: Based on upper poverty line
: Figures are in percentage