1. Uganda  
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Abstract

Uganda has seen impressive growth, coupled with substantial poverty reductions over the past few decades. However, recent research relying on non-monetary wealth indicators show much more modest progress. We argue that an outdated poverty line that does not take into consideration the spatial variation of diets in Uganda can explain much of the paradox. We estimate new poverty lines using the Uganda National Household Survey of 2012/13. When we use a single national poverty line, we come close to the official poverty estimates. However, if we estimate utility consistent poverty lines using six spatial domains, poverty levels and geographical poverty patterns are much closer to those suggested by studies that use non-monetary wealth indicators.

# Introduction

During the past few decades, Uganda has experienced substantial economic growth. Especially during the nineties, Uganda outperformed other economies in Southern and Eastern Africa. Part of this accelerated growth is likely to be a peace dividend after years of civil war during the Amin and Obote regimes. However, some of this growth is also attributed to the far-reaching economic reforms implemented by the new government, transforming Uganda in one of the most liberal economies in Sub-saharan Africa (World Bank, 1993). This growth has been accompanied by equally impressive social progress. Indeed, Uganda used to be considered a show-case when it comes to reducing poverty, fighting HIV/AIDS and promoting social development (Dijkstra and van Donge 2001). Official poverty fell from about 56 percent in 92/93 to around 20 percent in 2012/13 (UBOS 2006, Ssewanyana and Kasirye, 2014). These days, in terms of economic growth, Uganda has been overtaken by some of the neighboring countries, such as Tanzania and Ethiopia. While GDP growth shows a marked slowdown from 2005/06 onward (Duponchelle et al. 2014), official poverty statistic seem to persist their downward trend.

However, research has cautioned that the positive aggregate trends may hide less positive dynamics at a more disaggregate level. For instance, Emwanu et al 2006 find that poverty reductions in the North were much less pronounced, and today, poverty levels in for example Karamoja remain disturbingly high. More recent research on poverty dynamics using a recently constructed panel data survey also point out stagnation or even a reversal in some areas (Ssewanyana and Kasirye, 2004, Duponchelle et al 2014). More worrying is that as of late, some started to call the actual numbers into question. Levine (2012) points out significant diversions between the level and evaluation of poverty figures reported by the government of Uganda and those published by the World Bank. Both qualitative and quantitative research on asset accumulation and non-monetary poverty indicators also suggest much more modest progress. (Daniels and Minot 2015; Kakande, 2010). Some scholars argue that the use of a single national poverty line may bias estimates in certain areas (Appleton 2003; Jamal 1998).

In this chapter, we document our efforts to estimate poverty from scratch using PLEASe. We use the latest available household survey and construct our own welfare indicator, touching upon the various challenges we meet along the way. We estimate a new set of utility consistent poverty lines taking into account the spatial variation in the cost of basic needs within Uganda and compare this to results using official Ugandan poverty lines.

# **2 Poverty in Uganda**

According to official estimates, poverty has decreased substantially since the 1990s in Uganda. Table 1 draws from various reports of large scale household budget surveys that are periodically cried out by the Uganda Bureau of statistics to monitor poverty. At the national level, we see that poverty has been declining steadily over time, with the exception of 2002/3 when poverty increased slightly. The long run downward trend in poverty, from 55.5 percent to 19.7 percent in just twenty years means an average yearly reduction in headcount poverty of more than 3 percent.

However, the aggregate trend hides quite some variation in poverty reduction rates at a more disaggregate level. For example, if we restrict attention to the Central region, headcount poverty reduced from 45.6 percent to 5.1 just percent. This is partly because the Central region comprises Kampala, and poverty fell much faster in urban areas than in rural areas. The reduction in Central region over the 20 year period amounts to a 4.4 percent reduction per year. At the other extreme, the drier and more remote Northern region starts of with poverty that is already about 60 percent higher than headcount poverty in the central region. Poverty reduces from 72.2 percent to 43.7 percent over the course of 20 years, which amounts to an annual rate of poverty reduction of less than 2 percent.

The contrast becomes more pronounced with increasing disaggregation. If we go down to the sub-regional level, the lowest level at which the data is deemed representative, we find poverty reduction is reduced from about 5 percent at the turn of the century to about 0.7 percent at the latest survey, corresponding to an impressive annual poverty reduction rate of 8.5 percent. The North-Eastern region, which comprises one of the poorest districts in Uganda, Karamoja, started the new century with headcount poverty at a staggering 82.8 percent. By 2012/13, still around three quarters of the population in this sub-region live below the national poverty line. The annualized rate of poverty reduction in this region was only about 1 percent per year.

Naturally, the divergence in rates of poverty reduction means that inequality has worsened over time. While the North was only 60 percent poorer than the Central region in 1992/03, it was already 2.7 times poorer than Central in 2002/2003 and more than eight times poorer in 2012/13. Again, this increasing inequality in well-being is amplified to at lower levels of disaggregation. While at the beginning of the 20th century the poorest subregion was about 20 times as poor at Kampala, the North-east is more than 100 times as poor than the capital in 2012/13. This illustrates that Uganda has been much less successful in reducing poverty in poor and remote areas. This fact was already noted in Okidi and McKay (2003) who found that using panel data, the chronic poor did not benefit from market oriented reforms that seem to drive poverty reduction at the aggregate level. Recent work using newly available panel data seem to confirm this (Ssewanyana and Kasirye (2014)).

Apart from the above qualifications, there are also methodological issues with the way poverty is measured in Uganda. In particular, official estimates in Uganda rely on a single national poverty line that is based on a nationally representative consumption bundle of the poor. While the continued use of this poverty line is defended as key to the comparability of poverty over time, it also means that todays welfare is compared to the cost of a basket of goods that does not adequately reflect the consumption patterns of the poor today. In addition, Appleton (2003) and Jamal (1998) argue that a single poverty line that does not take into account spatial heterogeity in the diets of the population can not adequately identify the poor. When they allow for different spatial heterogenity in the composition of the basic needs basket, they find that the Western region is poorer than official statistics suggest, reflecting the relatively high price of matooke as a source of energy.

Official figures have also been challenged recently when compared to alternative methods to estimate poverty. For instance, Levine (2012) compares the official poverty estimates with the poverty estimates using the World Bank's “one dollar a day” international poverty line. He finds that absolute poverty is higher according to the World Bank, and also that reduction in poverty is substantially slower than official numbers suggest. The author identifies adjustments to account for urban and rural price differences, adjustments to account for household composition and statistical weighting as potential causes for the divergence.

Studies that employ alternative welfare indicators also paint a less optimistic picture. For example Daniels and Minot (2015) use information on asset ownership, access to water and sanitation and other non-monetary indicators of well being to predict poverty using Demographic and Health Surveys (DHS) data. Using methods related to poverty mapping and small area estimation, they find that poverty has reduced much slower than official figures suggest. The same conclusion is reached in studies that use more qualitative methods to assess poverty and wellbeing (Kakande, 2010).

Utility-consistent poverty lines using revealed preferences

From the above, we learn that one of the main weaknesses of the official poverty measures is that they are based on a poverty line that is constructed using a single food commodity bundle for the entire country. In addition, this food basket was constructed in 1993 and has not been updated since, apart from accounting for inflation using the consumer price index. However, it is well known that in many instances - for example, if relative prices of basic commodities vary by region (or through time) and preferences permit substitution - the use of a single consumption bundle may yield inconsistent poverty comparisons (Tarp et al. 2002). While differences in prices in different locations are usually incorporated in poverty measurement by adjusting the welfare indicator to reflect prices used in the construction of the poverty lines (or by adjusting the poverty lines to reflect prices used in the construction of the welfare indicator), it is becoming more and more common to also account for spatial heterogeneity in consumption bundles in an effort to increase the specificity of poverty lines (e.g. Ravallion and Lokshin 2006; Mukherjee and Benson 2003).

While differences in consumption baskets are interesting in their own right, they become relevant only in the context of poverty measurement and analysis, as we relate a welfare indicator to the cost of these basic needs. Indeed, different diets may provide the same basic needs (usually a given amount of kilo-calories per day) at significantly different costs, which complicates poverty comparisons between units (regions, households, individuals, and so forth) with different diets. It is especially in this regard that Uganda provides an interesting case. Matooke, the main ingredient in the diet of households in the west, may be more or less expensive per energy unit than, for example, sorghum, the main staple in the north. As such, it would be misleading to compare the west with the north on the basis of a single food poverty line, even after allowing for spatial price heterogeneity.

But how can we be sure that two different consumption bundles provide the same basic needs? Or, in the language of Ravallion and Bidani (1994), how do we ensure *consistency*?[[1]](#footnote-2) The theory underlying absolute poverty lines is grounded in welfare economics and constrained utility maximization. In this context, the fixed standard of living represented by the poverty line is viewed as a level of utility associated with the minimally acceptable standard of living. In other words, two bundles of goods are consistent if they yield the same utility.

We follow Ravallion and Lokshin (2006), who argue that the theory of revealed preferences provides a suitable framework for answering these questions. The idea uses the rationality assumption that economic agents that derive utility from consumption always prefer consuming more to less. A representative consumer in a particular spatial domain will choose only that bundle that minimizes expenditure. Thus, any other bundle that yields the same level of utility should be equally expensive as or more expensive than the chosen bundle. No bundle can cost less than the chosen one yet yield that same utility, because then the rational consumer should have chosen that one. Or, as in Gibson and Rozelle (2003), if the cost of a bundle from another domain would be cheaper if bought in a specific domain, this means it must have lower utility than the bundle in that specific domain, as otherwise the rational consumer would have picked the bundle from the other domain. We use a minimum cross-entropy approach to adjust expenditure shares such that they meet revealed preference conditions (Arndt and Simler 2010). More information on the rationale behind utility consistent poverty lines and the estimation using minimum cross-entropy can be found in Van Campenhout et al. (2014).

# 4A reassessment of poverty and its evolution in Uganda

Poverty measurement involves generally three steps. The first two steps are often referred to as the **identification** and the last step involves **aggregation**. It involves the construction of 1) a welfare measure and 2) agreeing on a poverty line. The welfare measure is used to rank units (most of the time these are households, but this can also be individuals or countries) according to well-being. Ideally, this should be measure that reflects the multi-dimensional nature of well-being, but in general, a money metric measure that is correlated with well-being is chosen. In practice, preference is given to consumption expenditure above income, as the first tends to be less susceptible to fluctuations over time.

The poverty line is then used to delineate the poor from the rest of the population. There are two common ways to fix poverty lines. The cost of basic needs (CBN) method assembles a basket of goods typically consumed by the poor that generates a minimum necessary energy level (eg 2200 kcal per adult) that is deemed sufficient, and a non-food allowance is added. Alternatively, the food energy intake method is derived from a regression of food expenditure on caloric intake at the individual level, which is then used to predict expenditure needed to yield a particular minimum necessary energy level. The advantage of this method is that a non-food allowance is automatically included in the predicted expenditure, but the disadvantage is that one needs detailed data on food energy intake to estimate the regression.

In the aggregation step, the information pertaining the position of the units in terms of welfare with respect to the poverty line is summarized at a particular level of aggregation. For instance, can simply count the number of households that fall below the poverty line and express this as a proportion of the total number of households at a national level. This would be the poverty headcount, and this is usually what people refer to when they talk about the level of poverty in a particular country. An often used poverty measure, that encompasses the poverty headcount, is the Foster-Greere-Thorbecke (FGT) indicator.

## The data

Uganda has been lauded for its efforts to monitor poverty and wellbeing. At the basis of this is a fairly well functioning statistics agency that collects information on socio-economic characteristics at the household and community levels for monitoring development performance. As such, researchers that want to work on poverty measurement and comparisons have a range of data they can work with. The first household budget survey since the end of the civil war was done in 1989/89 and smaller surveys have been done at varying time intervals. From 2000 onward, the format of the survey was adapted. The survey was modeled conform the Living Standard Measurement Survey (LSMS) and was held every three years. This first survey is popularly known as the Uganda National Household Survey 2000/09 or UNHS-1. The latest available UNHS that was publicly available at the time of writing was the one from 2012/13.

The UNHS consists of some core modules, such as a socio-economic, a labour, a community and a price module. In some rounds, some modules are added to collect information on some specific areas. For example, the UNHS 2009/10 had an extra module on the informal sector. In this regard, the UNHS 2005/06 was particularly interesting, as it had an extended module on smallholder agriculture, which is the main stray of the majority of the population in Uganda, especially the poor. The UNHS generally surveys about 6,000 to 8,000 households.

The UNHS 2005/06 is also noteworthy because it is part of the LSMS-ISA, a project managed by the LSMS team at the World Bank with the aim of making high quality panel data with a strong focus on agriculture available in a selection of African countries. In principle, the analysis that is described in this chapter can readily be replicated using one of the UNPS rounds, although the sample size is likely to be too small to estimate poverty lines in many different spatial domains.

While it is difficult to assess the quality of the data without a proper benchmark, internal inconsistencies within the data signal that there are at least some issue with the quality. For example, in the UNHS wave of 2010/11, there is a gigantic unexplained drop in the number of people reporting to consume sweet potatoes (and to a lesser extent cassava). While in all other rounds of the UNPS about 1500 households report non-zero consumption of sweet potatoes, this is less than 300 households in the 2010/11.

In this study, we will present results based on the UNHS 2012/13. This is the latest UNHS available. In addition, it covers about 6888 households, a sufficient numbers of observations available to allow us to estimate poverty lines at a sufficiently disaggregated level. We will use six spatial domains (Kampala, Rural central, Rural East, Rural North, Rural West, and Other Urban).

## Constructing the welfare indicator

The datasets that are disseminated by the UBOS normally have an extra file that can be used to replicate the official poverty numbers. For instance, for the UNHS 2012/13 has a file called Poverty2012.dta. In this file, one will find a variable called welfare, which is essentially the welfare indicator[[2]](#footnote-3). You also need the poverty lines (called spline) and the weights called hmult. Poverty can then simply be calculated by

. gen poor = welfare < spline

. mean poor [fweight = hmult]

The consumption aggregate is convenient to replicate official estimates. However, often, one would like to rerun the analysis with slight modifications to check robustness. For instance, one may want to check if scaling household consumption by household size or the number of adult equivalent units within the household would make a difference. This is impossible to do with the UNHS, as there is no detailed information available on how the consumption aggregate has been constructed and the code that is used to generated welfare variable is not in the public domain. Furthermore, while some datasets have a range of seemingly intermediate variables, such as the Poverty2012.dta referred to above, others have only a few intermediate variables[[3]](#footnote-4).

The toolkit contains modules to construct a consumption aggregate. Although it would be possible to use the consumption aggregated supplied by UBOS to rank households and compare them to poverty lines, the construction of the poverty lines itself requires more detailed consumption information than just the welfare indicator. Therefore, we decided to reconstruct our own welfare indicator from the raw consumption data.

One of the first things we do is merge in household size from the household roster in section 2 to the identifying information in section 1 which we will use to classify households into different spatial domains. To determine household size, we only incorporate usual of regular members present or absent, which leads to an average household size of about 5 members. Already, due to undocumented data cleaning or a different definition of what constitutes a household, our household size differs slightly from the one reported in the Poverty2012.dta dataset.

To calculate the welfare indicator at the household level, we start in section 6B and we simply sum all quantities consumed out of purchases at home, consumed out or purchases away from home, consumed out of home production and quantities received in kind or for free. These sums are divided by seven to get daily consumption for each consumption item at household level. We also sum corresponding values to come to daily value of total consumption of each item at the household level.

A typical issue encountered in household budget surveys is that food consumption is often recorded in non-standard units. Some may be straightforward to convert to kilograms, such as one kimbo of maize grains, where kimbo is a well-known type of cooking oil that comes in 1 kg plastic pots. Others are less precisely defined, such as a bunch of bananas or a bundle of fish. We convert these units using a set of conversion factors that UBOS assembled during the Uganda Census of Agriculture. But even then, about 7 percent of the household – item level observations can not be converted into kilograms because of missing conversion factors. In most cases, these are foodstuff that are not well defined, such as “other fruits”.

Section 5 provides a section on health, with a single question on the cost of consultation. However, section 6 C, on expenditures on Non-durable Goods and Frequently Purchased services also asks about health and medical care expenses. This is done in a much more detailed way than in section 5, explicitly probing for traditional doctor’s fees and in-kind or received for free services. We therefore include medical expenditures as non-durable goods and frequently purchased services. on also . Other categories under this heading are (imputed) rent and fuel such as charcoal; non-durable and personal goods such as soap; transport and communication such as air time; and other services such as barber. As this was recorded during the last 30 days we converted to daily averages and aggregated to total household expenditures.

Section 4 records education for household members above the age of 5 and has a question on expenditures. However, section 6D on expenditures on semi-durable and durable goods and services that were purchased during the last year also includes questions on expenditure for education. To encourage uniformity with health, we therefor decided to use the figures from section 6D rather than those in section 4. Other semi-durable and durable goods include clothing and footwear; furniture; household appliances and equipment; utensils and others. Finally, there is a separate section for non-consumption expenditure, which collects tax payments, interests, funerals and other functions,…

The resulting welfare indicator is quite close to the official consumption aggregate that is in the Poverty2012.dta. The variable, called welfare, is expressed on a monthly basis and scaled by the number of adult equivalents[[4]](#footnote-5). We therefore divided it by 30 and multiplied it by the number of adult equivalents and then divided it again by the number of household members to make it comparable to our daily consumption per capita measure. In addition, the welfare variable is expressed in 2005/06 prices, so we multiply it by 1.85, which is the CPI that is implied by the poverty lines. We then get that our measure has a median value of about 2700 Ugandan shillings per day per capita, while the official estimate is slightly lower at about 2530.

Figure X shows in more detail how the distributions compare to each other. The solid line represents a kernel density estimate of the distribution of the official welfare indicator, and the dashed line is the one we computed from the raw data. As you can see, they are very close, although there the distribution of our welfare indicator suggests a slightly higher degree if inequality. The reason for the difference is most likely because of the way UBOS adjusts the welfare indicator in various ways, although this is nowhere documented and can only be assumed from the naming of intermediate variables. For instance, there are intermediate variables expressed in nominal and market prices. Some are adjusted for inflation, and others are also adjusted for regional price differences.

Poverty line

The official poverty estimates are based on poverty lines that are rooted in a single national food consumption bundle, derived from 1993/94 Monitoring Survey data. In particular, a single food basket was identified at the national level with 28 of the most frequently consumed food items by households with less than the median income. The items in this food basket were then converted into caloric equivalents and scaled to generate 3,000 calories per adult equivalent per day using the World Health Organization (WHO) estimates for an 18‐30-year-old male as a reference. Next, a non-food allowance was added. Non-food requirements were estimated as the average non-food expenditure of those households whose total expenditure was around the food poverty line. The non-food allowance does allow for spatial heterogeneity, as separate averages were calculated for urban and rural locations interacted with the four regions (central, eastern, northern, and western), using the method described in Ravallion and Bidani (1994). These poverty lines have since been updated by the official inflation figures each time a new household survey came out. More information can be found in Appleton (1999).

average amount of kilo calories required per capita.

First of all, the poverty lines take into account difference in demographic composition of space as well. If we do not consider spatial differences, we need an average 2184 kcal.

spdomain calpp

1 2222.19

2 2145.168

3 2114.045

4 2111.022

5 2138.286

6 2160.557

Official poverty

Uganda has a very diverse diet. In addition to these staples, Ugandans also derive a lot of energy from beans.

To illustrate the unusual variation in diets in Uganda, we have selected five staple crops that are consumed in Uganda. We have calculate how much calories a typical poor person derives from each of these crops in rural areas in each of the four regions[[5]](#footnote-6). This is illustrated in the dotchart in Figure XXX. The chart shows

[insert fig2.pdf about here]

Differences in diets would not really be a problem for poverty measurement and analysis if the cost of arriving at a specified level of calories would be the same regardless of the diet. However, different products often widely differ in terms of the price per kilo calorie. This is illustrated in the barchart in figure XXX

[insert fig3.pdf about here]

Calorie content of consumed food items

## Prices

## Number of spatial domains

To make sure that all basic needs bundles correspond to the same utility level, we use a revealed preference approach (Ravallion and Lokshin, 2006). The underlying assumption is that a rational consumer always prefer consuming more, sometimes referred to as the principle of nonsatiation. Therefore, a particular bundle in a spatial domain will only be chosen if it minimizes expenditure. As such, we need to compare the cost of all other bundles to the cost of the bundle in a particular domain. If a bundle of the other domains turns out to be cheaper in that particular domain, it means it must have lower utility, otherwise, the rational consumer would have choses it. Thus, a particular bundle in a spatial domain is utility consistent if and only if all bundles in the other spatial domains values at the prices of the particular domain turn out to be equally or more expensive.

We have 6 spatial domains. This means that each 6 bundles needs to be compared to 5 other bundles, making for a total of 30 comparisons. Of these 30 comparisons, only 8 fail the revealed preference test. Also, 7 comparisons mutually consistent, meaning that the revealed preference conditions are satisfied both when the two bundles, A and B, are evaluated at region B’s prices and when the same bundles are evaluated at region A’s prices. As there are 15 such mutual possibilities, this means that almost 50 percent are mutually consistent. This seems to be remarkable, as other studies suggest failures of revealed preference conditions occur more often than not. For example, Ravallion and Lokshin (2006) find that in Russia, revealed preference conditions are violated almost half of the time and only find 1 percent of comparisons to involve mutually consistent bundles. Arndt and Simler (2010) find that conditions are less violated in Egypt, but more problematic in Mozambique.

In case revealed preference conditions fail, adjustments need to be made to make the bundles involved pass the test. We use a minimum cross-entropy framework to adjust consumption shares in such a way that revealed preference conditions are satisfied. The details of this procedure are described in Arndt and Simler (2010)

[insert Table 2 about here]

More specifically, following \citet{RePEc:ucp:ecdecc:v:58:y:2010:i:3:p:449-474},

we start by constructing food bundles in each spatial domain. In each

domain, a basket of food products that satisfies basic calorie needs

is identified using information on the age and sex composition of

the households and the recorded consumption patterns of poorer households.%

\footnote{The demographic structure of each region is mapped to an average basic

calorie requirement in each region using \citet{WHO1985}. The mapping

from these basic caloric needs into basic needs consumption bundles

is based on \citet{FAO1968}. %

It can be instructive to have a closer look at the poverty lines.

After all, poverty lines are not only useful to separate the rich

from the poor, but also serve as deflators for cost-of-living differences,

permitting interpersonal welfare comparisons when the cost of acquiring

basic needs varies over time or space (\citealt{RePEc:fth:wobali:133}).

Table \ref{tab:Utility-consist} reports the utility-consistent poverty

lines we estimate using the 2012/13 UNHS based on the six different

spatial domains.%

\footnote{The poverty lines in Table \ref{tab:Utility-consist} are aggregated

to different spatial domains for the sake of comparison to official

statistics. The underlying poverty lines for the six spatial domains,

in addition to a poverty line using only one (national) spatial domain

for comparison, are presented in Table \ref{tab:Utility-Consistent-Poverty}

in the appendix. It is not possible to directly compare the utility-consistent

poverty lines we estimate to the official poverty lines, since spatial

price differences are not reflected in the poverty lines. Instead,

the official poverty measures incorporate spatial price difference

by adjusting the welfare indicator.%

} The cost of living seems to be highest in the central region. The

Western region comes in second. This is consistent with the findings

of \citet{RePEc:oup:jafrec:v:12:y:2003:i:4:p:598-624} and \citet{New1}

and is caused by the low energy content and relatively high price

of matooke, a staple grown and consumed mostly in the western and

central regions. Households in the eastern region, on the other hand,

consume a lot of cassava, mostly in dried or flour form, which is

only three times as costly but more than eight times as nutritious.

While the 2012/13 poverty lines are directly derived from the 2012/13

UNHS, the poverty lines for the other years are simply deflated using

the Consumer Price Index. Poverty lines are expressed in Ugandan shillings

per person per day.

\begin{table}

\protect\caption{Utility-consistent poverty lines based on UNHS 2012/13\label{tab:Utility-consist}}

\begin{centering}

\begin{tabular}{lccccc}

\hline

& \multicolumn{1}{c}{2005/06} & \multicolumn{1}{c}{2009/10} & 2010/11 & 2011/12 & 2012/13\tabularnewline

\cline{2-6}

Uganda & 929.34 & 1338.13 & 1425.52 & 1760.93 & 1860.54\tabularnewline

& & & & & \tabularnewline

Rural & 901.93 & 1298.66 & 1383.47 & 1708.99 & 1805.66\tabularnewline

Urban & 1024.69 & 1475.43 & 1571.78 & 1941.61 & 2051.44\tabularnewline

& & & & & \tabularnewline

Central & 1048.57 & 1509.80 & 1608.40 & 1986.84 & 2099.23\tabularnewline

Eastern & 798.40 & 1149.59 & 1224.66 & 1512.81 & 1598.39\tabularnewline

Northern & 914.35 & 1316.54 & 1402.52 & 1732.52 & 1830.52\tabularnewline

Western & 975.27 & 1404.26 & 1495.96 & 1847.95 & 1952.49\tabularnewline

& & & & & \tabularnewline

Kampala & 1262.39 & 1817.68 & 1936.38 & 2392.00 & 2527.30\tabularnewline

Central 1 & 1013.24 & 1458.94 & 1554.21 & 1919.91 & 2028.51\tabularnewline

Central 2 & 1020.24 & 1469.02 & 1564.95 & 1933.17 & 2042.53\tabularnewline

East Central & 803.39 & 1156.78 & 1232.33 & 1522.28 & 1608.39\tabularnewline

Eastern & 794.83 & 1144.45 & 1219.19 & 1506.05 & 1591.25\tabularnewline

Mid-northern & 917.31 & 1320.81 & 1407.07 & 1738.14 & 1836.46\tabularnewline

Northeastern & 911.04 & 1311.78 & 1397.45 & 1726.26 & 1823.91\tabularnewline

West Nile & 910.74 & 1311.34 & 1396.98 & 1725.68 & 1823.30\tabularnewline

Mid-western & 975.58 & 1404.72 & 1496.45 & 1848.55 & 1953.12\tabularnewline

Southwestern & 974.96 & 1403.82 & 1495.50 & 1847.38 & 1951.88\tabularnewline

\hline

\end{tabular}

\par\end{centering}

\centering{}Source: Figures are calculated from the respective UNHS

2012/13.

\end{table}

Let us now look at the evolution of poverty during the recent past.

We will present two sets of results. The first set of results, reported

in Table \ref{tab:Poverty-headcounts-1spdomain}, uses only one spatial

domain. In other words, we estimate a single national poverty line

based on a single national food basket.%

\footnote{This national poverty line was estimated to be 1233.42, see first

row in Table \ref{tab:Utility-Consistent-Poverty} in the appendix.

One may be surprised that the poverty line based on a single spatial

domain is so low, and below all of the other poverty lines estimated

in the six regions, instead of somewhere in between. This is because,

using only one spatial domain essentially means that a single poverty

line is constructed based on the lowest cost and lowest consuming

rural zones. This leads to a low poverty line, closer to the lowest

poverty line using different spatial domains (eastern region) than

to the highest poverty line (Kampala). The fact that the poverty line

using one spatial domain is actually below the lowest poverty line

when different spatial domains are used is due to the utility consistency

adjustments. Poverty lines for the central and eastern regions are

significantly adjusted upward, lifting them above the poverty line

using a single spatial domain. %

} We do this because, in a way, this would be the closest to simply

updating the official poverty line, that is based on one single national

consumption basket. Second, we will present results for an analysis

that uses the six spatial domains mentioned above (Kampala, Rural

Central, Rural East, Rural North, Rural West, and Other Urban). The

results are reported in Table \ref{tab:Poverty-headcounts-6spdomains}.

\begin{table}

\protect\caption{Poverty headcounts 2002-2012 using one spatial domain\label{tab:Poverty-headcounts-1spdomain}}

\begin{centering}

\begin{tabular}{lcccccccccc}

\hline

& \multicolumn{2}{c}{2005/06} & \multicolumn{2}{c}{2009/10} & \multicolumn{2}{c}{2010/11} & \multicolumn{2}{c}{2011/12} & \multicolumn{2}{c}{2012/13}\tabularnewline

& P0 & contr & P0 & contr & P0 & contr & P0 & contr & P0 & contr\tabularnewline

\hline

\hline

Uganda & 0.216 & 1.000 & 0.200 & 1.000 & 0.207 & 1.000 & 0.157 & 1.000 & 0.136 & 1.000\tabularnewline

& & & & & & & & & & \tabularnewline

Rural & 0.250 & 0.965 & 0.229 & 0.963 & 0.232 & 0.962 & 0.179 & 0.951 & 0.159 & 0.900\tabularnewline

Urban & 0.046 & 0.035 & 0.047 & 0.037 & 0.056 & 0.038 & 0.045 & 0.049 & 0.060 & 0.100\tabularnewline

& & & & & & & & & & \tabularnewline

Central & 0.103 & 0.148 & 0.082 & 0.127 & 0.048 & 0.059 & 0.022 & 0.031 & 0.024 & 0.046\tabularnewline

Eastern & 0.223 & 0.257 & 0.200 & 0.244 & 0.248 & 0.321 & 0.186 & 0.379 & 0.165 & 0.352\tabularnewline

Northern & 0.488 & 0.390 & 0.385 & 0.346 & 0.300 & 0.335 & 0.286 & 0.382 & 0.336 & 0.512\tabularnewline

Western & 0.164 & 0.205 & 0.212 & 0.283 & 0.240 & 0.285 & 0.129 & 0.207 & 0.051 & 0.090\tabularnewline

\hline

\end{tabular}

\par\end{centering}

\begin{centering}

Source: Figures are calculated from the respective UNHS and UNPS waves.

\par\end{centering}

\centering{}Note: P0 means headcount poverty, contr means contribution

to national poverty.

\end{table}

Poverty headcounts using one spatial domain as reported in Table \ref{tab:Poverty-headcounts-1spdomain}

are much lower than the official headcounts reported in Table \ref{tab:Official-poverty-headcount00s}.

For instance, the national estimate in 2005/06 is about 10 percentage

points lower than the official estimates. However, the reduction in

poverty between 2005/06 and 2009/10 (7.4 per cent) is much smaller

than in the official figures (more than 20 per cent). There is a slight

increase in poverty in 2010/11, but national headcount poverty falls

to about 16 per cent in 2011/12.%

\footnote{While part of the increase in 2010/11 is likely caused by the increase

in food prices, data problems provide an additional explanation. For

instance, simple counts of how many households report consuming a

particular commodity point to some severe problems. In 2010/11 only

about 300 household report consuming sweet potatoes, while this is

around 1,400 in the other rounds. For cassava, in 2010/11 only 562

household report consumption, versus again about 1,400 in all other

rounds of the UNPS.%

} Overall, the reduction in poverty between 2005/06 and 2012/13 was

about the same as in the official figures at around 37 per cent, most

of this coming about in the two last years of the panel. The spatial

patterns are the same, as both these and the official estimates are

based on a single poverty line.

The national poverty headcounts are much higher than the official

ones if we use six spatial domains (Table \ref{tab:Poverty-headcounts-6spdomains}).

While \citet{New10} argue that the original 1993 poverty lines may

have increased too little to keep pace with inflation and that differences

in the measurement of consumption may contribute to the underestimation

of poverty, we find that consumption bundle aggregation also seems

to depress poverty figures. The reductions in poverty also seem more

modest than the official ones, with an overall reduction in poverty

between 2005/06 and 2012/13 of about one quarter. We also see that

the largest reduction the number of people living below the poverty

line happened between 2011/12 and 2012/13. However, if we look at

the evolution of the poverty gap (as reported in Table \ref{tab:Poverty-gap-2002-2012}

in the Appendix), the largest reduction is between 2010/11 and 2011/12.

This suggests quite some mobility below the poverty line between 2010/11

and 2011/12.

If we disaggregate between rural and urban poverty, we see that most

of the poverty reduction has been happening in rural areas. Over the

years, poverty in rural areas has steadily fallen from almost 50 per

cent to 36 per cent. This is different from what has been happening

in urban areas. While between 2005/06 and 2010/11 urban poverty was

on the decline, it started rising again afterwards. A marked acceleration

in urban poverty between 2011/12 and 2012/13 together with a steady

decline in rural poverty reduced the contribution of rural poverty

to overall poverty from about 94 per cent to 88 per cent in 2012/13.

The evolution of official figures is in line with our findings, except

that we find a much stronger rebound of urban poverty.

Finally, we disaggregate poverty by region. We find that in the Northern

region, which is the poorest, poverty has decreased by 15 per cent

over the entire period. However, the evolution was far from linear.

Especially between 2009/10 and 2010/11, there was a strong reduction

in poverty. But since then, poverty in the northern region has been

rising again. The tables in the appendix show that, especially in

2012/13, not only headcount poverty but also the poverty gap and the

severity of poverty has been increasing. Official poverty figures

report a reduction of 28 per cent between 2005/06 and 2012/13 in headcount

poverty, very close to what we find using only one spatial domain

(figure \ref{tab:Poverty-headcounts-1spdomain}). The western region

is, just as in the official estimates, the second richest region.

However, it is now 55 per cent poorer than the richest region. This

gap between the western and central regions is significantly larger

than in the official statistics, where poverty rates in the western

region are 33 per cent higher than in the eastern region. Thus, while

we do not observe the changes in the rankings observed by \citet{RePEc:oup:jafrec:v:12:y:2003:i:4:p:598-624},

our results are consistent with the finding that the west is poorer

than official figures suggest.

The central region, already the least poor region at the start of

the panel, reduced headcount poverty by half between 2005/06 and 2012/13

according to our estimates using six spatial domains. Again, official

estimates record higher poverty reductions (almost 70 per cent), which

is again similar to what we find in our estimates using only one spatial

domain. Inequality in poverty headcount has also increased over time.

While the northern region initially contributed 27 per cent to overall

poverty, this has increased to 37 per cent in 2012/13. The contribution

of the eastern region also has increased substantially. And while

severity of poverty has reduced in the northern region, in 2012/13,

almost 60 per cent of the national severity of poverty measure was

contributed by the North. If we disaggregate the 2012/13 data further,

we find that most poverty is found in the northeast, where over 80

per cent of the individuals live in poverty. This is followed by West

Nile, a distant second with 60 per cent of the population living in

poverty.

\begin{table}

\protect\caption{Poverty headcounts 2002-2012 using six spatial domains\label{tab:Poverty-headcounts-6spdomains}}

\begin{centering}

\begin{tabular}{lcccccccccc}

\hline

& \multicolumn{2}{c}{2005/06} & \multicolumn{2}{c}{2009/10} & \multicolumn{2}{c}{2010/11} & \multicolumn{2}{c}{2011/12} & \multicolumn{2}{c}{2012/13}\tabularnewline

& P0 & contr & P0 & contr & P0 & contr & P0 & contr & P0 & contr\tabularnewline

\hline

\hline

Uganda & 0.423 & 1.000 & 0.381 & 1.000 & 0.370 & 1.000 & 0.359 & 1.000 & 0.315 & 1.000\tabularnewline

& & & & & & & & & & \tabularnewline

Rural & 0.476 & 0.938 & 0.431 & 0.951 & 0.413 & 0.959 & 0.408 & 0.943 & 0.360 & 0.879\tabularnewline

Urban & 0.158 & 0.062 & 0.117 & 0.049 & 0.108 & 0.041 & 0.121 & 0.057 & 0.167 & 0.121\tabularnewline

& & & & & & & & & & \tabularnewline

central & 0.291 & 0.213 & 0.231 & 0.187 & 0.143 & 0.098 & 0.146 & 0.089 & 0.149 & 0.123\tabularnewline

Eastern & 0.374 & 0.219 & 0.295 & 0.188 & 0.389 & 0.282 & 0.379 & 0.337 & 0.355 & 0.328\tabularnewline

Northern & 0.670 & 0.273 & 0.603 & 0.285 & 0.489 & 0.306 & 0.529 & 0.308 & 0.567 & 0.374\tabularnewline

Western & 0.463 & 0.295 & 0.485 & 0.340 & 0.473 & 0.314 & 0.379 & 0.266 & 0.231 & 0.175\tabularnewline

\hline

\end{tabular}

\par\end{centering}

\begin{centering}

Source: Figures are calculated from the respective UNHS and UNPS waves.

\par\end{centering}

\centering{}Note: P0 means headcount poverty, contr means contribution

to national poverty.

\end{table}

To summarize, we feel that the poverty measures and the evolution

of poverty over time are much more credible, both from a theoretical

and an empirical point of view. The continued use of outdated poverty

lines based on a single food basket is likely to lead to inconsistent

poverty estimates, especially in a country where different regions

have widely varying diets. Indeed, most of the staples in these diets

are effectively non-tradables, deriving their price from local demand

and supply conditions. The result is that the cost of basic needs,

even though anchored in a single caloric requirement, may vary significantly.

We also feel that the poverty levels, as well as the estimated reduction

in poverty, are closer to what other researchers have deemed more

realistic.

# 6.Conclusion

In this chapter, we reassess the evolution of poverty over the past ten years in Uganda. Official figures suggest substantial poverty reduction, but independent researchers note that the benefits of economic growth have been shared unequally. In addition, casual observation does not correspond to the rosy picture that official figures suggest. Other indicators that define wellbeing in a broader way, such as adult literacy and maternal health, also put Uganda at a much lower level than what would correspond to officially disseminated poverty levels.

One possible explanation for this divergence lies in the poverty line. The poverty line that is currently in use to estimate official poverty in Uganda was constructed more than a decade ago, using data from a 1993/1994 survey. In addition, this poverty line relies on a single food consumption basket for Uganda, despite the fact that Uganda consists of a diverse set of regions, each with their own diets. These diets are also exceptional in their difference in cost to obtain a certain level of kilo-calories. Lumping all regions together and assuming they require the same amounts of each commodity disregards the cultural and agro-climatic diversity that typifies Uganda. We therefore follow Arndt and Simler (2010), and construct poverty lines that better reflect local diets, which results in poverty estimates and patterns that are more realistic than the official ones. For instance, they are much more in line with the levels and evolution of other non-monetary poverty indicators. A case in point is the nutritional status of children in the west, a region highly dependent on the cost inefficient non-tradable food crop matooke. According to the Uganda Demographic Household Survey 2011, height-for-age scores are worst in the western region, except for the Karamoja district. Ssewanyana and Kasirye (2010) also find that the highest rates of stunting are in the southwestern sub-region. This at least indicates that the situation in terms of poverty is less rosy than official figures suggest.

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1. A poverty measure is consistent if two indiciduals at the same welfare level are considered equally poor. [↑](#footnote-ref-2)
2. The data should be requested in writing from the director of the Uganda Bureau of Statistics. However, a reference to the content of the file is available on the website of the international household survey network: http://catalog.ihsn.org/index.php/catalog/4620/datafile/F18 [↑](#footnote-ref-3)
3. Such as for instance the file kwelfare.dta that holds information to calculate poverty in the UNHS2009/10. The reference is http://catalog.ihsn.org/index.php/catalog/2119/data\_dictionary#page=F21&tab=data-dictionary [↑](#footnote-ref-4)
4. While intermediate variables mention per capita, working papers and articles that document the construction of the official Ugandan welfare measure such as Appleton (1999) and Levine (2012) state that private household consumption is scaled by calorific equivalence scales. [↑](#footnote-ref-5)
5. In the analysis, we use 6 spatial domains, adding Kampala and Other Urban to the four. To keep the chart simple, we do not add these two spatial domains here. [↑](#footnote-ref-6)