A Study of Multidimensional Poverty Index in The Gambia: Alkire-Foster Approach

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ABSTRACT

By utilizing the most recent nation's representative Gambia Demographic and Health Survey (GDHS) 2013, this paper has empirically measured multidimensional poverty both at the national and subnational level. Build on the Alkire-Foster methodology and focusing on three dimensions of well being: health, education and living standard this study has estimated the level and depth of multidimensional poverty for The Gambia in 2013.

The multidimensional nature of Alkire-Foster methodology provides a deeper understanding of poverty and deprivation, thus it complements income poverty estimates by informing policymakers about the joint distribution of several deprivations. This information can be used to better design policy and target poverty alleviation programs, as well as better allocate resources at the national and local government area level.

Keywords: Poverty, Multidimensional Poverty, Alkire-Foster Approach, Gambia

CHAPTER ONE

INTRODUCTION

This chapter serves as an introduction to the paper on the Multidimensional Poverty Index (MPI) measure for The Gambia and the chapter has the following units:
1.1 Berief history of poverty measurement in The Gambia
1.2 Background and Context
1.3 Purpose of the measure

1.1. BRIEF HISTORY OF POVERTY MEASUREMENT IN THE GAMBIA

The Gambia's first and pioneer official poverty studies were carried out in 1992, 1998 and 2003. These early poverty measurements already carried out in The Gambia, namely were; Household Economic Survey 1992, National Household Poverty Survey 1998 and Integrated Household Survey 2003. 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.

According to the 1992 poverty report, "The ILO study selected households with a food consumption per adult-equivalent unit corresponding roughly to the food poverty line. Rural households spending GMD75 to GMD125 per month per adult-equivalent unit were selected and the food poverty line for rural households was GMD100 per month per adult-equivalent unit. These households spend GMD25 per month per adult-equivalent unit on non-food items." Therefore, the poverty line for rural household was established at GMD125. The same procedure for urban households led to a poverty line of GMD186.50.

In the 1998 survey, the 1992 poverty line was updated using the price index for the food basket (some cost is calculated for this food basket which has seven categories). Therefore, the 1992 and 1998 poverty lines were obtained by updating an ad hoc price index for the poor.

In 2003, 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 and rural). The exchange rate used to convert the poverty line for 2003: (for 3 February 2003) GMD24.29 for 1 US$. Finally the following values were obtained for the poverty lines:
ZF = D 4488 in domain Banjul and Kanifing;
ZF = D 4337 in domain Other Urban;
ZF = D 4615 in domain Rural.
ZL = D 5636 in domain Banjul and Kanifing;
ZL = D 5835 in domain Other Urban;
ZL = D 6145 in domain Rural.
ZU = D 6388 in domain Banjul and Kanifing;
ZU = D 6771 in domain Other Urban;
ZU = D 7009 in domain Rural.

Table 1: ESTIMATE OF POVERTY LINES

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DOMAIN	**ZF**	**ZL**	**ZU**	**ZF**	**ZL**	**ZU**
Banjul and Kanifing	D4488	D5636	D6388	$183	$232	$263
Other Urban	D4337	D5835	D6771	$179	$240	$279
Rural	D4615	D6145	D7009	$190	$253	$289
SOURCE: GAMBIA IHS 2010						

The exchange rate of GMD24.29 for 1 US$ (February 2003) was used for conversion. The inflation between 2003 and 2010 has been in the range of 30-35 percent, so applying the same on the 2003 lower and upper poverty lines, it is justified the use of $1 and $1.25 per person per day as lower and upper poverty lines.

Since then, income poverty rates based on household consumption expenditure have been estimated regularly using the data from the corresponding Gambia Integrated Household Survey (IHS) of 2010 and 2015.

Although no such poverty estimates were carried out before 2003, data and estimates do exist on other social and economic indicators, which have direct relevance to poverty. The plans and programs then, though they did not explicitly mention poverty reduction, were pro-poor. The government addressed issues of poverty through the expansion of social services, rural development and income generation activities.

It is to be noted that the concept of poverty has become more pronounced in recent years and 'Poverty Reduction' was the theme of the PAGE Three Year Plan pverty reduction and policy document (2012-2015). The recent poverty analysis carried out using The Gambia Integrated Household Survey 2010 data estimates that the country's income poverty rate at 48.4 percent of the population are living below the poverty line of $1.25 per day, a significant reduction from 16.5 percent in 2003.

This is an improvement from the 2003- 2004 IHS which shows that 58 percent of the population was living below the poverty line. But it is important to note that the threshold for the headcount index in 2003-2004 was $1 per person per day. Using the $1 per person per day in the 2010 IHS, overall poverty has decreased significantly from 58 percent in 2003 to 39.7 percent in 2010.

The poverty line used is $1.25 per person per day but analysis has also been done for the proportion of the population living below $1 per day. The "poor" therefore are defined as the population living on less than $1.25 per day. The use of consumption rather than income, is because of the better quality of the consumption data in this survey as the case in most Integrated Household Surveys. People are considered as poor in the sense that their income is actually close to their observed consumption.

The poverty rate calculated is, like the previous estimates, based on the World Bank's Cost of Basic Needs (CBN) approach. This approach estimates the food component of the poverty line as the cost of a food bundle that provides a predetermined minimum required level of food energy. Th total poverty line (or simply referred as "poverty line") is obtained by adding to the food component the cost of the non-food allowance. The household and all members of the households are considered to be poor if the per capita consumption expenditure is less than the poverty line.

The first global MPI was released in 2010 with an aim to encourage the development of national versions of the MPI, which are tailored to their national circumstances. The Gambia is hoping and shall soon join the pioneer set of countries that have already done their national MPI's.

1.2. BACKGROUND AND CONTEXT

Going by the newly and recently launched Four Year Plan; The Gambia National Development Plan (NDP 2018-2021) by the government of The Gambia, by the end of the plan in 2021 The Gambia should have reduced all forms of poverty in a multidimensional way. This means Gambia should have more people who not only have a better income, but also have better access to health, education and enjoy a decent standard of living. Among the priorities for the National Development Plan is to monitor poverty reduction in a multidimensional manner.
Until recently, many countries including Gambia have measured poverty by income or consumption. But no one indicator such as income can capture the multiple aspects of poverty. Th global Multidimensional Poverty Index is a new international measure of poverty developed by Oxford Poverty and Human Development Initiative and the United National Development Programme Human Development Report Office (UNDP HDRO). The MPI complements income poverty measures by reflecting the acute deprivations that people face at the same time. It has three dimensions: health, education and living standard.

The MPI is based on the concept of capability. Nobel Laureate, Professor Amartya Sen has argued that social evaluation should be based on the extent of the freedoms that people have to further the objectives that they value. The term 'capability' or 'capability set' provides information on the array of functioning's that a person could achieve. Poverty in this context becomes 'capability failure' – people's lack of the capabilities to enjoy key 'beings and doings' that are basic to human life. The concept is inherently multidimensional.

1.3. PURPOSE OF THE MEASURE

The Gambia's multidimensional poverty measurement indicators have been selected in order to provide a clearer way of designing programs that deliberately target the poor. It can help in monitoring and evaluating plans and programs. One of the main purposes is to compare Local Government Areas in terms of multidimensional poverty and thereby allow policy makers and other stakeholders to focus services and policies accordingly. Targeted local government areas interventions can thus be more easily achieved.

This analysis is also an attempt to construct a multidimensional poverty measure that will be a yardstick to measure its progress in the future. It can thus help policy makers to assess how its various policies are affecting people, particularly the poor.

CHAPTER TWO

LITERATURE REVIEW

This chapter presents some of the studies on multidimensional poverty analysis adopting the Alkire Foster methodology.

The work of Muller, Kannan, & Alcindor (2016) propose a new approach to measuring multidimensional poverty in Seychelles based on a mix of objective and subjective information about households living conditions, and on how these households view their spending priorities. For their proposed new methodology for Seychelles the idea is: (1) to base the identification of the poor on the highest stated priorities by the monetary poor households, (2) to aggregate all the dimensions according to their priority percentages in household responses, (3) to propose an aggregation formula. The data that is used to calculate the proportion of households for each priority for their study is drawn from the answers to the question 'On what would you spend a small additional sum of money?' However, as they want to have a criteria reasonably representative of the general population of the poor, they only use the answers for the income-poor households, as defined by comparing their 1996 per adult-equivalent total expenditure with the Seychelles national poverty line deflated to correspond to 2012. They propose using the 'priority discounting' of deprivations, which has the advantage of reducing the extent of the Union approach head count index, often found excessive. Doing so also makes less dramatic the omission of one or several dimensions in the index due to observation obstacles.

The identification of the poor in Seychelles is based on the Union rule defined on a few highest priority dimensions. In the case of Seychelles, according to household responses, there are two high priority dimensions on which household would spend an additional amount of resources if they could: shelter and food. An indicator akin to the head-count index in one-dimensional poverty is the proportion of the poor. For their new approach to multidimensional measure for Seychelles, by accounting only for the basic needs and using the monetary poor ranking, they obtain five dimensions : (i) Shelter; (ii) Food; (iii) Water/electricity; (iv) Health; and (v) Education. Though debt repayment, acquisition of household appliance and saving-insurance are also important for these households, they did not include them as they are not basic needs in the conventional sense. The empirical results based on their new approach show that a small but non-negligible minority of Seychellois can be considered as multidimensionally poor, mostly as not being able to satisfy their shelter and food basic needs. Also, the Seychelles social aid programs run by the Agency for Social Protection is poorly targeted whether evaluated in terms of multidimensional poverty or in terms of one-dimensional monetary poverty.

Acar (2014) conducted a study for Turkey and this study focuses on the dynamics of multidimensional poverty in Turkey. The purposes of the study are twofold: the first is to identify "poor" in Turkey by proposing a multidimensional poverty measure that incorporates various dimensions closely related to the well-being of individuals (such as labor market, housing, health and living standards), and the second is to investigate how the new measure differs from other existing poverty measures (i.e., income poverty and EU material deprivation) by using random effect probit model. Using a panel data drawn from the Survey of Income and Living Conditions (SILC) in the years 2007-2010, The findings show that the new measure is partially consistent with the other measures and multidimensional poverty decreased during the period under examination. Empirical work reveals that higher years of schooling, homeownership or being a rental/asset income recipient decreases the probability of being multidimensionally poor, while large household size,

attachment to agricultural employment or being a social welfare income recipient increases the probability of being multidimensionally poor.

Solomon (2012) combines the "static proxy" and "multidimensional" approaches to capture chronic poverty without a panel dataset. The data utilized in his study is from the Brazilian National Household Survey (PNAD). He estimate poverty using three rounds of the survey: 1999, 2001 and 2009 and analyze the evolution of poverty in Brazil, comparing the income and multidimensional approaches. He choose common dimensions of poverty, and assign equal weights to each dimension in the multidimensional poverty index. The indicators selected are those linked to important health, education and labor outcomes that are associated with poverty. A total of seven indicators he used to measure poverty. These indicator are Child School Attendance, Years of schooling, Improved sanitation, Safe water Electricity, Shelter and Assets and most of these dimensions have direct policy relevance in Brazil.
The results of the main estimates of the multidimensional poverty index for the year 1999, 2001 and 2009 in Brazil show that the percentage of people deprived on years of education is expected to keep decreasing while child attendance had one the lowest deprivation rates. Access to electricity is almost universal, and asset ownership is steadily progressing. The high levels of deprivation in sanitation and the relatively steady pattern in shelter remain concerns. As expected rural regions exhibited much higher deprivation rates for all indicators, with the exceptions of electricity access and child school attendance. Sanitation remained the greatest concern even in the urban areas. The large divergence between rural and urban deprivation rates suggests that geographic location is a strong determinant of poverty. The order of the frequency of deprivations was the same for rural and urban areas and suggests that urban and rural areas experience the same pattern of deprivations, even though deprivation was more common in rural areas.

Government of Nepal National Planning Commission (2018) report presents Nepal's official national Multidimensional Poverty Index (MPI) using their latest data from the Multiple Indicator Cluster Survey (MICS) 2014. Based on the Alkire Foster methodology, the MPI counts the joint deprivations faced by individuals. Following the indicators of the global MPI, the Nepal MPI includes multiple indicators related to health, education, and living standards. Their results show that the major contributing indicators to overall poverty in Nepal and in rural Nepal are malnutrition and insufficient years of schooling. They found that ground-breaking and continuous progress has been made in reducing multidimensional poverty. According to strictly harmonised data, Nepal halved its MPI 2006–2014 and at the same time, they saw statistically significant progress being made across all of the ten indicators of multidimensional poverty.

Ravallion (2011) emphasises that the contribution of recent "multidimensional indices of poverty" may not be as obvious as one thinks. There are two issues in assessing that contribution: whether one believes that a single index can ever be a sufficient statistic of poverty, and whether one aggregates in the space of "attainments," using prices when appropriate, or "deprivations," using weights set by the analyst. His paper argues that we should aim for a credible set of multiple indices rather than a single multidimensional index. Partial aggregation will still be necessary, but ideally the weights should be consistent with well-informed choices by poor people.

Leite & Teles (2011) conducted a study and this study rests on the proposition of an analytical and methodological contribution to complement the administrative and managerial capacities of the national government and Minas Gerais state and for the application and dissemination of the Multidimensional

Poverty Index, developed by the Oxford Poverty & Human Development Initiative. The data used for MPI modelling are from the FJP's Household Sample Survey for the state of Minas Gerais, collected in 2009 and 2011. The analysis is divided into administrative regions to create a more accurate and calibrated poverty diagnosis. The results indicate that there is a significant social contrast in the Minas Gerais State, with a vast division between rich regions located along the central-south axis and poor regions along the north-east axis of the state.

National Statistics Bureau (2014) report presents Bhutan's national Multidimensional Poverty Index (MPI) which is based on the Alkire Foster methodology. It retains the three dimensions of health, education, and standard of living used in the global MPI. To tailor the measure to Bhutan's priorities, instead of the 10 indicators used in the global MPI, 13 indicators are used here. Two indicators each are under the health dimension (Child Mortality and Food Security) and the education dimension (School Attendance and Schooling), while nine indicators are used within the standard of living dimension (Cooking Fuel, Sanitation, Electricity, Water, Road, Housing, Asset, Land and Livestock). Each of the dimensions is given an equal weight of 1/3. The findings show that the employment status of the household head in different sectors also had a bearing on the poverty rate. When analysed for the household size, there is not much variation in the proportion of poor according to different household sizes. The poverty rate is higher if a household is comprised of nine or more members, but the share of the population living in such households represents just nine percent of the population.

Datt (2013) paper takes a critical look at the class of multidimensional poverty measures recently proposed by Alkire and Foster (2007, 2011a). The critique centres on the specific formulation of the dominance axioms, in particular the weak transfer and the weak rearrangement axioms. Stronger versions of these dominance axioms as well as a new cross-dimensional convexity axiom are proposed leading to a new class of multidimensional poverty measures.

Santos & Ura (2008) paper estimates multidimensional poverty in Bhutan applying a recently developed methodology by Alkire and Foster (2007) using the 2007 Bhutan Living Standard Survey data. Five dimensions are considered for estimations in both rural and urban areas (income, education, room availability, access to electricity and access to drinking water) and two additional dimensions are considered for estimates in rural areas only (access to roads and land ownership). Also, two alternative weighting systems are used: a baseline using equal weights for every dimension and another one using weights derived from the Gross National Happiness Survey. Estimates are decomposed into rural and urban areas, by dimension and between districts. It was found that multidimensional poverty is mainly a rural phenomenon, although urban areas present non-depreciable levels of deprivation in room availability and education. Within rural areas, it was found that poverty in education, electricity, room availability, income and access to roads, contribute in similar shares to overall multidimensional poverty, while poverty in land ownership and water have a relatively smaller contributions. The districts of Samtse, Mongar, Chukha, Trashigang and Samdrup Jongkhar are identified as giving the highest contribution to overall multidimensional poverty. The methodology is suggested as a potential formula for national poverty measurement and for budget allocation among the districts and sectors.

Nawar (2014) research into multidimensional poverty has gathered momentum in the last half decade, most notably in the aftermath of the global food and financial crises of 2007–2008. It has gained further

momentum since the UNDP-OPHI launched the 2010 Human Development Report (HDR) and more recently as part of the continuing debate on the post-2015 global development agenda. The availability of very large and rich datasets on households and individuals from micro surveys and the advances in survey data analysis have transformed the research. Not only does this raise new policy questions, but it also suggests new policy instruments. Multidimensional poverty theories have been vigorously advocated by some of the most thoughtful and hard-working economists. The Alkire-Foster Multidimensional Poverty Index (MPI) measures overlapping multiple deprivations that people face simultaneously. It is compatible with the Millennium Development Goals and has the advantage that it distils this of multiple indicators into a single score. While the standardised global MPI model allows for international comparisons to be made for different countries, numerous caveats exist when using it nationally 'as is' Individual countries can refine the global MPI model to make it more applicable to their own conditions by expanding the scope for incorporating national- or subnational-specific dimensions, indicators, weights and cut-offs. This paper analyses the 2013 round of the multidimensional poverty and inequality results for Arab States at the national and subnational levels using the results from the OPHI's Alkire- Foster standardised global MPI model. It also explores how some countries in the Arab region can use the MPI as a tool to develop targeted policies aimed at tackling the 'hard core of poverty' at a national and subnational level.

Bérenger (2017), the main goal of his paper is to highlight the empirical contribution of methodological refinements to "counting approach" poverty measures, and to use ordinal variables as a means of understanding multidimensional poverty in two South Mediterranean countries, namely Egypt and Jordan. His paper relies on the general framework proposed by Silber and Yalonetsky (2013) to compare multidimensional poverty measures, such as the measure based on the Alkire and Foster approach (2011) and applied by UNDP in the construction of the MPI, and others that are sensitive to the distribution of deprivation counts for individuals, such as the family of poverty measures introduced by Chakravarty and D'Ambrosio (2006) and Rippin (2010), and those based on the extension of the Aaberge and Peluso approach as suggested by Silber and Yalonetzky (2013). The findings they obtained make it possible to highlight the complementarities between the various poverty measures. These complementarities prove to be particularly useful for analyzing poverty trends per country and also per area of residence.

Cavapozzi, Han, & Miniaci (2015), state that multidimensional poverty assessment requires a weighting scheme to aggregate the well-being dimensions considered. They use Alkire and Foster's (2011a) framework to discuss the channels through which a change of the weighting structure affects the outcomes of the analysis in terms of overall poverty assessment, its dimensional and subgroup decomposability and policy prescriptions. They exploit the Survey on Health, Ageing and Retirement in Europe to evaluate how alternative weighting structures affect the measurement of poverty for the population of over 50s in ten European countries. Further, they show that in their empirical exercise the results based on hedonic weights estimated on the basis of life satisfaction self-assessments are robust to the presence of heterogeneous response styles across respondents.

Dehury & Mohanty (2015) using unit data from the Indian Human Development Survey (IHDS), 2004-05, their paper estimates and decompose the multidimensional poverty dynamics in 84 natural regions of India. Multidimensional poverty is measured in the dimensions of health, knowledge, income, employment and household environment using ten indicators and Alkire-Foster methodology. The unique contributions of their paper are inclusion of a direct economic variable (consumption expenditure) to quantify the living

standard dimension, decomposition of MPI across the dimensions and the indicators and provide estimates at sub-national level. Results indicate that about half of India's population are multidimensional poor with large regional variations. The decomposition of MPI indicates that economic dimension alone accounts for about one-third of multidimensional poverty in most of the regions of India. Based on these analyses, the authors suggest target based interventions in the poor regions to reduce poverty and inequality, and achieve the Millennium Development Goals in India.

Le et al.(n.d.) examine multidimensional poverty in Vietnam using the method of Alkire and Foster (2007, 2011) and household data from Vietnam Household Living Standard Surveys 2010 and 2012. The poverty is analyzed in five dimensions including health, education, insurance and social support, living condition, and social participation. The result shows that multidimensional poverty has decreased slightly during the 2010-2012 period. There is a large difference between multidimensional poverty and expenditure/income based poverty. While Northern Mountain is the poorest region in terms of income or expenditure, Mekong River Delta is the poorest region in terms of multidimensional poverty. The decomposition analysis shows that the ethnic minority group has a small proportion of population but contributes largely to the national multidimensional poverty. They also decompose the total multidimensional poverty into the contribution of five dimensions. They found that the deprivation of dimension 'Social insurance and social assistance' contributes the most to the total poverty, while the deprivation of dimension 'Living conditions' contributes the least to the total poverty.

Abu-ismail et al. (2015) acknowledged that in recent years, there has been much interest in multidimensional poverty measurement. This spur in interest has led to a variety of competing measurement approaches and techniques. At the global level, the Multidimensional Poverty Index (MPI) developed by Alkire and Santos (2010, 2014) is regularly published by the Human Development Report of the United Nations Development Programme (UNDP). The global MPI implements one of the Alkire and Foster (2007 and 2011) class of poverty measures using data on deprivations in health, education and living standards. Many developing countries have also developed their own country-specific multidimensional poverty measures tailored to suit national development policy priorities and data constraints. In the Arab region, for example, multidimensional poverty studies have been implemented in many countries, mainly using the Alkire-Foster and Unsatisfied Basic Needs method. In their paper, their analyses and results are developed based on the Alkire-Foster approach given its wider appeal and methodological simplicity. The growing interest in multidimensional poverty has also resonated in the discussions on the post-2015 development agenda. In the context of the sustainable development goals (SDGs), for example, the debate was whether the MPI should replace the US$1.25 per person per day poverty line as the main global poverty reduction measure. In fact, this debate is long overdue. The global money metric poverty comparisons are fundamentally flawed as they rest on the validity of the assumption of a constant purchasing power across time and space. Due to the well-documented problems related to adjustments for exchange rates and inflation, money metric poverty lines, which are often evaluated in 2005 purchasing power parity (PPP) exchange rates, do not hold purchasing power parity. Arguably, the published PPPs, which are derived based on the International Comparison Programme, underestimate the cost of living in middle- income countries relative to the poorest countries.

OXFAM (2013) recognized that there is currently a wave of enthusiasm for "building resilience" in the international humanitarian and development sectors. This has coincided with a number of attempts to both define what resilience is and devise ways of measuring it. However, rather than comprehensively reviewing

these attempts, the paper presents Oxfam GB's own approach for both understanding and measuring resilience. It begins by interrogating the essence of resilience and substantiating its multidimensional nature. This is followed by describing the conceptual framework underlying the approach and how it applies the Alkire-Foster method used in the measurement of multidimensional constructs, such as poverty and women's empowerment. Thereafter, the approach's utility in informing situational analyses, outcome tracking, and impact evaluations is described, using primary data collected from an agro-pastoral population residing in Ethiopia's Somali Region. A critical review of its strengths and limitations then follows.

Robano & Smith (2014), many poverty, safety net, training, and other social programs utilize multiple screening criteria to determine eligibility. We apply recent advances in multidimensional measurement analysis to develop a straightforward method for summarizing changes in groups of eligibility (screening) indicators, which have appropriate properties. We show how this impact can differ across participants with differing numbers of initial deprivations. We also examine impacts on other specially designed multidimensional poverty measures (and their components) that address key participant deficits. They applied their methods to a BRAC ultra- poverty program in Bangladesh, and find that their measures of multidimensional poverty have fallen significantly for participants. This improvement is most associated with better food security and with acquisition of basic assets (though this does not mean that the cause of poverty reduction was program activities focused directly on these deficits). In general, They found that the BRAC program had a greater impact on reducing multidimensional poverty for those with a larger initial number of deprivations. They also showed how evaluation evidence can be used to help improve the selection of eligibility characteristics of potential participants.

Suppa (2015) compiled a multidimensional poverty index for Germany. Drawing on the capability approach as conceptual framework, he applied the Alkire-Foster method using German panel data. I suggest new operationalizations for two dimensions: social participation and practical reason, the latter drawing on recent findings in experimental economics. The results are consistent with earlier findings, but also reveal several new insights. Specifically, numerous decompositions of the poverty index prove helpful in better tracking and understanding developments. Moreover, he found poor individuals to be adversely affected by general trends in deprivation indicators. Comparing multidimensional and income-based methods, he found only a modest overlap of people considered as poor by both approaches. Moreover, he addressed the role of income as a dimension in multidimensional poverty indices.

Dhongde (n.d.) estimated a multidimensional poverty index (US-MPI) in the United States. Measuring poverty using multiple dimensions of deprivation provides a more complete picture of poverty. The US-MPI measures simultaneous deprivations experienced in multiple dimensions of well-being: health, education, income and housing. We use data on eight different indicators from the American Community Survey, and estimate the US-MPI across different regions, age, gender and race. His estimates indicate that in 2011, one in five adult American's were multidimensional poor. Lack of health insurance and severe housing burden were two significant indicators of deprivation.

Adeoti (2014), government continues to initiate programmes to address the challenge of poverty in Nigeria and he investigates the poverty levels over time using the multidimensional approach and estimates its determinants; using the National Living Standard Survey data of 2004 and 2010. The Alkire-Foster methodology and the Logit model were employed for analysis. The result showed that 70% of rural

households are headed by males, are still in their economically active years and practice agriculture. Also, more than one third have no education. The adjusted headcount ratio, headcount ratio and the intensity of poverty increased in 2010 relative to 2004. The absolute and percentage change in poverty reveals that change is higher for the headcount ratio than the intensity of poverty. The health, asset and education dimensions contributed most to poverty. Agriculture has the highest adjusted poverty incidence. Being in a female headed household, increased household size, working in the agriculture sector and residing in the northern zones increase the probability of being poor. Education, working in non-agricultural sector and services, residing in South West and South East zones reduce the probability of being poor. Effort should be targeted at reducing the number of poor households; and the health, asset and education dimensions require special attention; as well as those engaged in agriculture and resident in the northern regions of the country.

Wambugu (2010) utilized Demographic and Health Survey data to generate multidimensional poverty profiles for women and children in Kenya during the period 1993 to 2003.He measured wellbeing in two dimensions: assets and health status. The Alkire and Foster (2007) counting approach is applied to measure and order multidimensional poverty. Stochastic dominance approaches are were to make multidimensional poverty orderings across regions and areas of residence. A bi-Probit model is employed to explore the determinants of multidimensional poverty. The results show differences in the distribution of poor women and children across space and time. He found that assets contributed more than health to multidimensional poverty over the 10 year period. Rural areas contributed more than urban areas, while boys made a larger contribution than girls. The bi-Probit model results suggest that understanding the determinants of wellbeing in a multidimensional context can generate useful policy insights for improving human capital investments in Kenya.

Alkire, Apablaza, Chakravarty, & Yalonetzky (2013), how can indices of multidimensional poverty be adapted to produce measures that quantify both the joint incidence of multiple deprivations and their chronicity? Their paper adopted a new approach to the measurement of chronic multidimensional poverty. It relied on the counting approach of Alkire and Foster (2011) for the measurement of multidimensional poverty in each time period; and then on the duration approach of Foster (2011) for the measurement of multidimensional poverty persistence across time. The proposed indices are sensitive both to (i) the share of dimensions in which people are deprived and (ii) the duration of their multidimensional poverty experience. A related set of indices is also proposed to measure transient poverty. The behaviour of the proposed two families is analysed using a relevant set of axioms. An empirical illustration is provided with a Chilean panel dataset spanning the period from 1996 to 2006.

El Bouhadi, Elkhider, & Kchirid (2012) work aimed to understand the poverty phenomenon in Morocco. It is based on the multidimensional poverty assessment and analysis, through the Alkire and Foster approach to poverty measurement (2007). It is also based on the indicators which will allow us to measure the incidence of poverty by constructing a Wellbeing Composite Index (WCI) and by adopting the statistical methodology of step-by-step for Multiple Correspondence Analysis (MCA). This is done by using the DHS database. In their work, the attributes of this approach are classified into the three categories: housing, consumer durable goods and educational level. Their findings show that the incidence of poverty has increased over the past two decades, especially for those households having at least two dimensions. However, it is important to note that disparities between urban and rural areas are larger. This allowed them to conclude that poverty has remained a rural phenomenon.

Bérenger (2016), primary objective of his paper is to highlight the contribution of the recent methodological refinements of poverty measures based on counting approaches using ordinal variables to the understanding of the evolution of poverty in Cambodia, Indonesia and the Philippines. Using the general framework proposed by Silber and Yalonetzky (2013), his paper compares multidimensional poverty measures such as the Multidimensional Poverty Index used by the UNDP (an index based on the approach of Alkire and Foster (2011)) with others which are sensitive to the distribution of deprivation counts across individuals. To the latter family belong the poverty measures introduced by Chakravarty and D'Ambrosio (2006) and Rippin (2010) and those based on the extension of the approach of Aaberge and Peluso (2012), as suggested by Silber and Yalonetzky (2013). Poverty is estimated using Demographic and Health Surveys for three different years for Cambodia (2000, 2005 and 2010), for Indonesia (1997, 2003 and 2007), and for the Philippines (1997, 2003 and 2008) by considering the deprivations in education, health and standard of living. His findings indicate that Cambodia shows the highest level of poverty, followed by Indonesia and the Philippines, irrespective of the poverty measures used. At the national level, all countries reduced their multidimensional poverty over time using poverty measures as the one based on the approach of Alkire and Foster (2011) and those that are sensitive to the concentration of deprivations across individuals. As in most of Asian developing countries, poverty is largely a rural phenomenon. However, when examining the evolution of poverty over time for each country, conclusions drawn from the use of various poverty measures may differ regarding trends in poverty over time by area of residence as well as by region of residence.

ALKIRE (2009), when poverty measures reflect the experiences of poor people, then this empowers those working to reduce poverty to do so more effectively and efficiently. The literature on Multidimensional Poverty Measures has surged forward in the last decade. Her paper describes the broad directions of change, then presents a new and very simple measurement methodology for multidimensional poverty. It illustrates its application for poverty measurement, for targeting of social protection programmes, for monitoring and evaluation, and for poverty analysis. It also identifies how participatory input from communities can be directly reflected in the poverty measure.

Lustig (n.d.), poverty and well-being are multidimensional. Nobody questions that deprivations and achievements go beyond income. There is, however, sharp disagreement on whether the various dimensions of poverty and well-being can be aggregated into a single, multidimensional index in a meaningful way. Is aggregating dimensions of poverty and well-being useful? Is it sensible? Here he summarize and contrast three key papers that respond to these questions in strikingly different ways. The papers are "The HDI 2010: New Controversies, Old Critiques" by Jeni Klugman, Francisco Rodríguez and Hyung-Jin Choi; "Understandings and Misunderstandings of Multidimensional Poverty Measurement" by Sabina Alkire and James Foster; and "On Multidimensional Indices of Poverty" by Martin Ravallion.

Zahra & Zafar (2015) understand that marginality and social exclusion are the pertinent concepts that researchers have tried to link directly or indirectly with the universal issues of poverty and resource constraints. His research tried to find out the extent of multidimensional poverty and its determinants among Christian community living in the slums of the Lahore city of Pakistan, after considering them at the margin of socio-economic systems due to some causal complexes that exclude them from the growth prospects. The urban context is the particular focus of his paper. On the basis of the analytical framework developed, study examines the relationship between marginality and poverty in a systematic manner and investigates the

multidimensional poverty among the identified marginal group through a self-administered survey of 1380 individuals belonging to this minority group. He found these people as multidimensional poor, when he apply Alkire and Foster (2011) methodology. The study calculates intensity, depth and severity (M0, M1, and M2) measures of poverty to show more than half of population as multidimensional poor. The later analysis makes the use of Logit and Probit regression techniques to exhibit a strong impact of socio-economic and demographic determinants on the poverty profiles of Christian community.

Alkire & Roche (2011) presents a new approach to child poverty measurement that reflects the breadth and reflects components of child poverty. The Alkire and Foster method presented in this paper seeks to answer the question 'who is poor' by considering the intensity of each by considering the intensity of each child's poverty. Once children are identified as poor, the measures aggregate information on poor children's deprivations in a way that can be broken as poor, the measures aggregate information on poor deprivations in a way that can be broken down to see where and how children are poor. The resulting measures go beyond the headcount by taking into account the breadth, depth or severity of dimensions of child poverty.
The paper illustrates one way to apply this method to child poverty measurement method, using Bangladeshi data from four rounds of the Demographic Health Survey of the Demographic Health Survey covering the period 1997–2007. Results for Bangladesh show that the AF adjusted headcount ratio
adjusted headcount ratio adds value because it produces a different ranking than the simple headcount, because it also reflects the simultaneous deprivations children experience (intensity). Given this, they argue that child poverty should not be assessed only according to the incidence of poverty but also by the intensity of deprivations that batter poor children's lives at the same time. The Bangladesh example is used to illustrate how to compute and interpret the child poverty figures, how the final measure can be broken down by groups and by dimensions in order to analyse child poverty, how to interpret changes over time, and how to undertake robustness checks concerning the poverty cut-off.

Adetola & Olufemi (2012), the profiles and determinants of child poverty in rural Nigeria were identified using the Demographic and Health Survey, 2008 data. The multidimensional child poverty concept was applied to children under-5 years of age. In all, a total of 4,543 children were analyzed. About half of the children were male and the mean age for all the children is 29 months old. A single step Multiple Correspondence Analysis (MCA) was carried out to generate weights for five dimensions used in the multidimensional poverty estimations. These dimensions are safe drinking water, sanitation, housing, health and nutrition. The Alkire and Foster (2007) counting approach was applied to generate multidimensional poverty profiles for the children. When children are deprived in at least one dimension, 52% are multidimensional poor. The health and sanitation dimensions had the highest relative contribution to the overall multidimensional poverty index .

Gordon & Nandy (2012), one decade ago, UNICEF asked the Townsend Centre for International Poverty Research at Bristol University, UK, to produce a scientifically valid and reliable method for measuring the extent and depth of child poverty in all the developing regions of the world. The methodology had to be socially and culturally appropriate, age and gender specific and allow for the fact that children's needs change as they grow and develop. The methodology also needed to be consistent with agreed international definitions of poverty used for policymaking purposes and within the framework provided by international human rights conventions, particularly the UN Convention on the Rights of the Child (UNCRC). The

resulting methodology to measure child poverty (sometimes referred to as the 'Bristol' method by UNICEF) was briefly described by Gordon et al (2003) and was subsequently adopted by UNICEF as a core child poverty measure for the Global Study on Child Poverty and Disparities. The 'Bristol' method was designed to produce meaningful scientific comparisons of child poverty between countries and UNICEF regions.

Yu (2013) estimates multidimensional poverty in China by applying the Alkire-Foster methodology to the China Health and Nutrition Survey 2000-2009 data. Five dimensions are included: income, living standard, education, health, and social security. Results suggest that rapid economic growth has resulted not only in a reduction in income poverty but also in a reduction in multidimensional poverty in the last decade, both in terms of its prevalence and intensity. However, many challenges remain. There are wide disparities across provinces and between urban and rural areas. Moreover, rising deprivation in education in rural and less developed provinces should also be a policymaking concern.

Palić & Grofelnik (2017) unlike the standard unidimensional poverty indices, based mostly on monetary poverty measures, multidimensional poverty indices may include numerous non- monetary poverty indicators. This study utilized fuzzy and Alkire – Foster (AF) and fuzzy methodology to assess the poverty level in Bosnia and Herzegovina (B&H) and to compare the results with official poverty assessments. In addition to consumption as a monetary measure, They constructed AF and fuzzy indices by including numerous non-monetary measures that indicate housing quality, possession of durable goods and the household structure. AF multidimensional indices for B&H are calculated based on data from Household Budget Surveys (2004, 2007 and 2011) and fuzzy poverty indices are calculated based on data from HBS 2011. This research has found the differences in the values, direction and dynamics between unidimensional and multidimensional approaches to poverty measurement. Authors state that it is not sufficient to base the creation of more efficient social policies and poverty reduction strategies exclusively on unidimensional indices that address just one dimension of poverty.

CHAPTER THREE

METHODOLOGY

This paper adopts the Alkire Foster methodology of multidimensional poverty analysis. The content of chapter includes; the Alkire Foster methodology, a description of the Multidimensional Poverty Index and its properties, along with the measurement design and the data used for the analysis. This chapter is presented as follows:

3.1 Alkire Foster methodology

3.2 The Multidimensional Poverty Index

3.3 Properties of the Multidimensional Poverty Index

3.4 Measurement design

3.5 Data

3.1. ALKIRE FOSTER METHODOLOGY

The global MPI, which was developed by Alkire and Santos (2010, 2013) in collaboration with the UNDP, and first appeared in the 2010 Human Development Report, is one particular adaptation of the adjusted headcount ratio (M_0) proposed in Alkire and Foster (2011). This section outlines the methodology and relevant properties that are used in the subsequent sections to understand The Gambia's multidimensional poverty measure.

Sabina Alkire and James Foster have created a new method for measuring multidimensional poverty. It identifies who is poor by considering the intensity of deprivations they suffer, and includes an aggregation method. Mathematically, the MPI combines two aspects of poverty:

MPI = H x A

Incidence ~ the percentage of people who are poor, or the headcount: H

Intensity of people's poverty ~ the average percentage of dimensions in which poor people are deprived: A

3.2. THE MULTIDIMENSIONAL POVERTY INDEX

Suppose at a particular point in time, there are ***n*** people in The Gambia and their wellbeing is evaluated by ***d*** indicators. We denote the achievement of person i in indicator j by $\theta_{ij} \in R$ for all $i = 1,\ldots\ldots\ldots, n$ and $j = 1,\ldots\ldots\ldots, d$. Th achievements of ***n*** persons in ***d*** indicators are summarized by an $n \times d$ dimensional matrix X, where rows denote persons and columns denote indicators. Each indicator is assigned a weight based on the value of a deprivation relative to other deprivations. The relative weight attached to each indicator ***j*** is the same across all persons and is denoted by w_j , such that $w_j > 0$ and $\sum_{j=1}^{d} w_j = 1$.

For single-dimensional analysis, people are identified as poor as long as they fail to meet a threshold called the 'poverty line' and non-poor otherwise. In multidimensional analysis based on a counting approach – as with the adjusted headcount ratio – a person is identified as poor or non-poor in two steps. In the first step, a person is identified as deprived or not in each indicator subject to a deprivation cutoff. We denote the *deprivation cutoff* for indicator ***j*** by z_j and the deprivation cutoff are summarized by vector ***z***. Any person ***i*** is deprived in any indicator ***j*** if $x_{ij} < z_j$ and non-deprived, otherwise. We assign a deprivation status score g_{ij} to each person in each dimension based on the deprivation status. If person ***i*** is deprived in indicator ***j***, then $g_{ij} = 1$ and $g_{ij} = 0$ otherwise. The second step uses the weighted deprivation status scores of each person in all ***d*** indicators to identify the person as poor or not. An overall deprivation score $c_i \in [0,1]$, is computed for each person by summing the deprivation status scores of all ***d*** indicators, each multiplied by their corresponding weights, such that $c_i = \sum_{j=1}^{d} w_{ij} g_{ij}$. A person is identified as poor if $c_i \geq k$, where $k \in (0,1]$; and non-poor, otherwise. The deprivation scores of all ***n*** persons are summarized by vector ***c***.

After identifying the set of poor and their deprivation scores, we obtain the adjusted headcount ratio (M_0). Many countries refer to this as the MPI or Multidimensional Poverty Index. The focus axiom requires that while measuring poverty the focus should remain only on those identified as poor. This entitles us to obtain the censored deprivation score vector $c(k)$ from **c**, such that $c_i(k) = c_i$ if and $c_i(k) = 0$, otherwise. Then M_0 is equal to the average of the censored deprivation scores:

$$M_0 = MPI = \frac{1}{n}\sum_{i=1}^{n} c_i(k)$$

3.3 MULTIDIMENSIONAL POVERTY INDEX PROPERTIES

We now outline some of the features of M_0 that are useful for policy analysis. The first is that M_0 can be expressed as a product of two components: the share of the population who are multidimensionally poor or Multidimensional Headcount Ratio (H) and the average of the deprivation scores among the poor only (A).

Technically:

$$M_0 = MPI = \frac{q}{n} \times \frac{1}{q}\sum_{i=1}^{n} c_i(k) = H \times A$$

where ***q*** is the number of poor. This feature has an interesting policy implication for intertemporal analysis. A certain reduction in M_0 may occur either by reducing ***H*** or by reducing ***A***. This difference cannot be understood by merely looking at M_0. If a reduction in M_0 occurs by merely reducing the number of people who are marginally poor, then ***H*** decreases but ***A*** may not. On the other hand, if a reduction in M_0 occurs by reducing the deprivation of the poorest of the poor, then ***A*** decreases, but ***H*** may not. The second feature of M_0 is that if the entire population is divided into ***m*** mutually exclusive and collectively exhaustive groups,

then the overall M_0 can be expressed as a weighted average of the M_0 values of ***m*** subgroups, where weights are the respective population shares. We denote the achievement matrix, the population, and the adjusted headcount ratio of subgroup l by X^l, n^l and $M_0(X^l)$, respectively. Then the overall M_0 can be expressed as:

$$M_0 = MPI = \sum_{i=1}^{n} \frac{n^l}{n} M_0(X^l)$$

This feature is also known as *subgroup decomposability* and is useful for understanding the contribution of different subgroups to overall poverty levels. Note that the contribution of a subgroup to the overall poverty depends both on the poverty level of that subgroup and that subgroup's population share. The third feature of M_0 is that M_0 can be expressed as an average of the censored headcount ratios of indicators weighted by their relative weight. The Censored Headcount Ratio of an indicator is the proportion of the population that is multidimensionally poor and is simultaneously deprived in that indicator. Let us denote the Censored Headcount Ratio of indicator ***j*** by h_j. Then M_0 can be expressed as:

$$M_0 = MPI = \sum_{j=1}^{d} w_j h_j = \sum_{j=1}^{d} w_j \left[\frac{1}{n} \sum_{i=1}^{n} g_{ij}(k) \right];$$

Where $g_{ij}(k) = g_{ij}$ if $c_i \geq k$ and $g_{ij}(k) = 0$, otherwise. Similar relationships can be established between ***A*** and the deprivations among the poor. Let us denote the proportion of poor people deprived in indicator ***j*** by h_j^p. Then, dividing both sides of the above relationship by H, we find:

$$A = \frac{MPI}{H} = \sum_{j=1}^{d} w_j \frac{h_j}{H} = \sum_{j=1}^{d} w_j h_j^p$$

Breaking down poverty in this way allows an analysis of multidimensional poverty to depict clearly how different indicators contribute to poverty and how their contributions change over time. Let us denote the contribution of indicator **j** to M_0 by ϕ_j. Then, the contribution of indicator j to M_0 is:

$$\phi_j = w_j \frac{h_j}{MPI} = w_j \frac{h_j^p}{A}$$

3.4. MEASUREMENT DESIGN

Multidimensional poverty measure of The Gambia uses the global MPI's dimensions, indicators, and cutoffs, because these reflect some priorities as expressed in The Gambia's National Development Plan (2018-2021) and the will for The Gambia to meet Sustainable Development Goals (SDGs), and can be implemented using the 2013 DHS dataset as a baseline. Furthermore, the global MPI can be compared across countries, which means that The Gambia's progress may be readily understood in relationship to other countries using the global MPI. This section describes these parameters.

3.4.1. UNIT OF IDENTIFICATION AND ANALYSIS

The unit of identification refers to the entity that is identified as poor or non-poor – usually the individual or the household. In the case of The Gambia's MPI, the unit of identification is the household: the household members' information is considered together. This acknowledges intra-household caring and sharing – for example, educated household members reading for other members or multiple household members being affected by a child's malnutrition. In addition, it allows the measure to include indicators that are specific to certain age groups (for instance, school attendance).

The unit of analysis, meaning how the results are reported and analysed, is the individual person, as is customary for monetary poverty statistics. This means that, for instance, the headcount ratio is the percentage of people who are identified as poor.

3.4.2. DIMENSIONS, INDICATORS AND CUTOFFS

Gambia's MPI builds upon the global MPI, and retains three dimensions: health, education, and standard of living. The indicator choice, however, is affected by the GDHS datasets used in the analysis. Instead of the 10 indicators used in the global MPI, 9 indicators are used for this multidimensional poverty measure for The Gambia. All nine indicators are the same as the international or Global MPI. These indicators are nutrition, years of schooling, child school attendance, water, floor, cooking fuel, toilet, electricity and assets. All these nine indicators are included in the multidimensional poverty measure for The Gambia (as shown in Table 3.1).

Table 2: GAMBIA'S MULTIDMENSIONAL POVERTY MEASURE:DIMENSION, INDICATOR, DEPRIVATION CUTOFF AND RELATIVE WEIGHT

TABLE 1: GAMBIA'S MPI: DIMENSION, INDICATOR, DEPRIVATION CUTOFF AND RELATIVE WEIGHT			
DIMENSION	**INDICATOR**	**DEPRIVED IF……..**	**RELATIVE WEIGHT**
Education(1/3)	Years of Schooling	No household member aged 15 years or older has completed five years of schooling	1/6
	Child School Attendance	The household has any school - aged child (7 - 15) not attending school	1/6
Health(1/3)	Nutrtion	The household has any child under five with nutritional information is undernourished	1/3
Living Standard(1/3)	Electricity	The household has no electricity	1/18
	Improved Sanitation	The household has pitlatrine without slab/open pit/no facility/bush/field or other unspecified types of toilet facilities	1/18
	Safe Drinking Water	The household access to safe drinking water is from unprotected well, river/dam/lake/ponds/stream/canal/irrigation or other unspecified sources of drinking water or safe drinking water from home is atleast a 30 minute walk from home roundtrip	1/18
	Flooring	The household has a earth, sand, wood plank or other unspecified type of floor	1/18
	Cooking Fuel	The household cooks with Kerosene, wood, charcoal,straws/shrubs/grass, saw dust or other unspecified type of cooking fuels	1/18
	Assets Ownership	The household does not own more than one radio, television, refrigerator, bicycle, motorcycle/scooter or refrigerator and does not own a car/truck	1/18

3.4.3. WEIGHTS

The weights used in this paper follow the standard MPI structure of equal-nested weights, assigning 1/3 to each of the three dimensions of education, health and living standard. Within health the indicator nutrition is assigned weight (1/3) and for education, each of the two indicators are again equally weighted (1/6). However, within the living standard dimension six indicators are used. One-eighteenth of the weight (1/18) is assigned to the six indicators: electricity, toilet, water, floor, cooking fuel and asset

3.4.4. POVERTY AND DEPRIVATION CUTOFFS

Thresholds are used to decide whether a person is multidimensionally poor, using the Alkire and Foster measurement framework. It involves the following steps: (a) a dimension-specific poverty cutoff (deprivation cutoff) – where a person is considered deprived in each indicator if their achievement falls below the cutoff; and (b) a cross indicator cutoff (or poverty cutoff) - where the minimum number of deprivations necessary across indicators is set to determine whether a person is considered to be poor. For this paper, similarly to the global MPI, the poverty cutoff is chosen to be at roughly slightly more than one-third of indicators. Since the number of indicators taken is 9, a person who is deprived in (k=3) weighted indicators (34% of dimensions) is considered multidimensionally poor. Also, one can also consider a person intensely poor, if they are deprived of more than 50 percent of the indicators (k=5).

3.5. DATA

The data used to compute the multidimensional poverty measure of The Gambia is the 2013 Demographic and Health Survey (DHS), because it is most recent DHS with the relevant variables for this study. This is the first Demographic and Health Survey (DHS) conducted in The Gambia under the worldwide DHS programme. The 2013 Gambia Demographic and Health Survey (GDHS) was conducted by The Gambia Bureau of Statistics (GBoS) in collaboration with the Ministry of Health and Social Welfare and the National Population Secretariat Commission. The main objective of the survey was to provide comprehensive data on fertility and mortality, family planning, maternal and child health and nutrition, as well as information on maternal mortality and domestic violence. The survey also provides household-based data on the prevalence of malaria and HIV, two of the most life-threatening infectious diseases in sub-Saharan Africa. The survey was purposely planned to be conducted at the beginning of the last term of the Millennium Development Goals (MDGs) reporting period so that it would provide information on progress towards the attainment of set MDG targets in The Gambia. Furthermore, the 2013 GDHS, in conjunction with statistical information obtained from the Integrated Household Survey (2010), provides critical information for monitoring and evaluating targets set in the Programme for Accelerated Growth and Employment (PAGE 2012-2015) as well as various sector development policies and programmes. The survey covers a nationally representative sample and was designed to produce estimates of the major survey variables at the national, urban and rural areas, and Local Government Area levels. A total of 6,217 households were contacted during the survey. A partial comparison over time is possible with the 2013 and with future studies. The DHS survey tool provides one of the main sources of information to track the poverty-related then MDGs in The Gambia, as it includes questions on demographic characteristics, education, health, employment, household assets, household amenities, water supply, and sanitation, among others.

CHAPTER FOUR

RESULTS

4.1 MULTIDIMENSIONAL POVERTY RATE

Table 3 shows that The Gambia's multidimensional poverty rate for 2013 is 29.32 percent of the population. The average intensity of deprivation, which reflects the share of deprivations each poor person experiences on average, is 51.46 percent. Since MPI is the product of the percentage of poor people (H) and the average intensity of poverty (A), it yields an index of 0.151, which shows that poor people in The Gambia experience about 1/7th of the deprivations that would be experienced if all people were deprived in all indicators.

Table 3:MULTIDIMENSIONAL POVERTY RATES

POVERTY CUTOFF(K)	INDEX	INDEX	CONFINDENCE INTERVAL (95%)
	H(%)	29.32	[28.92 - 29.72]
K=34%	A(%)	51.46	[51.27 - 51.66]
	MPI	0.151	[0.1488 - 0.1531]
SOURCE: OWN CALCULATION			

The poverty statistics by urban and rural areas are shown in Table 4. The urban poverty rate, estimated at 13.52 percent is very much lower than the rural poverty, estimated to be at 45.24 percent.

Table 4: MULTIDIMENSIONAL POVERTY RATE BY PLACE OF RESIDENCE

		URBAN	RURAL
POVERTY CUTOFF (K)	INDEX	VALUE	VALUE
K=34%	H	13.52	45.24
	A	47.37	52.69
	MPI	0.064	0.238
SOURCE: OWN CALCULATION			

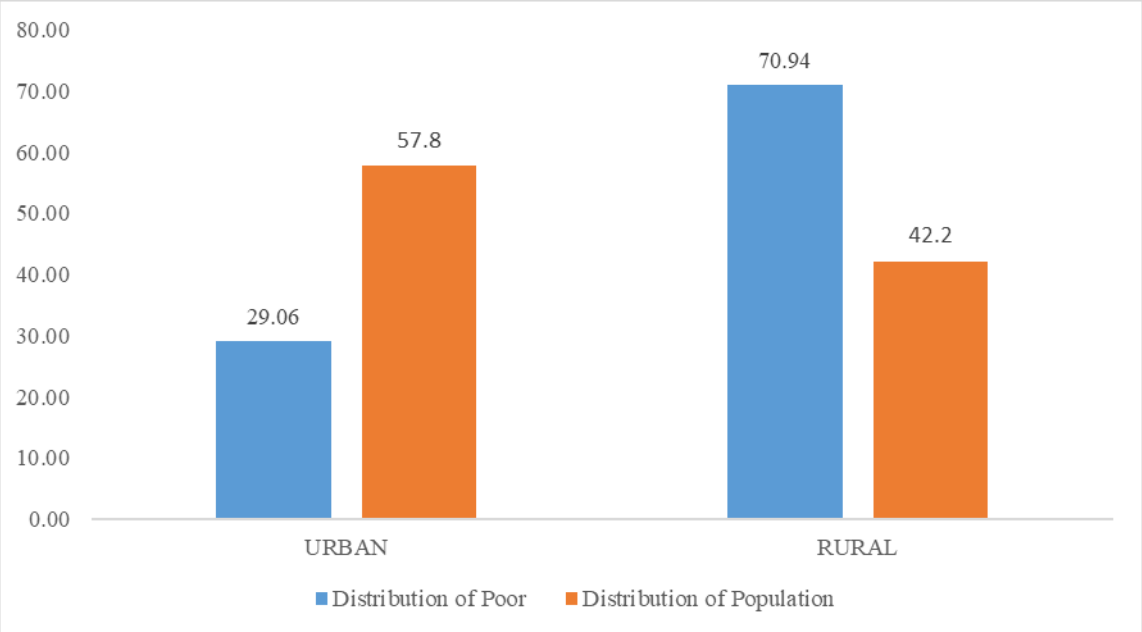
Table 5 shows the Local Government Area level estimates of the multidimensional poverty rate. The table shows that the poverty rates (H) are highest in Kuntaur, Basse, Janjanbureh and Kerewan. Meanwhile, Kanifing and Banjul have the lowest poverty rates. Since the population size varies between Local Government Areas, it is important to see the distribution of the poor. Among the Local Government Areas, 22.52 percent of the poor reside in Brikama, followed by Basse (21.73%) and Kerewan (17.08%). Considering the MPI, the poorest Local Government Areas are Kuntaur, Basse, Janjanbureh and Kerewan.

Table 5: MULTIMENSIONAL POVERTY RATE BY LOCAL GOVERNMENT AREA

LOCAL GOVERNMENT AREA	H(%)	A(%)	MPI	NUMBER OF POOR	% DISTRIBUTION OF POOR
BANJUL	8.61	44.85	0.039	2673	0.49
KANIFING	12.72	46.12	0.059	47981	8.81
BRIKAMA	17.80	49.16	0.088	122625	22.52
MANSAKONKO	34.89	49.39	0.172	28275	5.19
KEREWAN	42.26	51.74	0.219	92997	17.08
KUNTAUR	57.32	53.97	0.309	55430	10.18
JANJANBUREH	44.11	54.19	0.239	55224	10.14
BASSE	49.89	53.27	0.266	118351	21.73
SOURCE: OWN CALCULATION					

Figure 1 shows the distribution of the poor and overall population by place of residence or area. Although only 42.2 percent of the population reside in rural areas, almost majority of the multidimensionally poor live in rural areas (70.94%). Only about 29 percent of the country's multidimensionally poor people reside in urban areas.

Figure 1: PERCENTAGE DISTRIBUTION OF POOR AND POPULATION

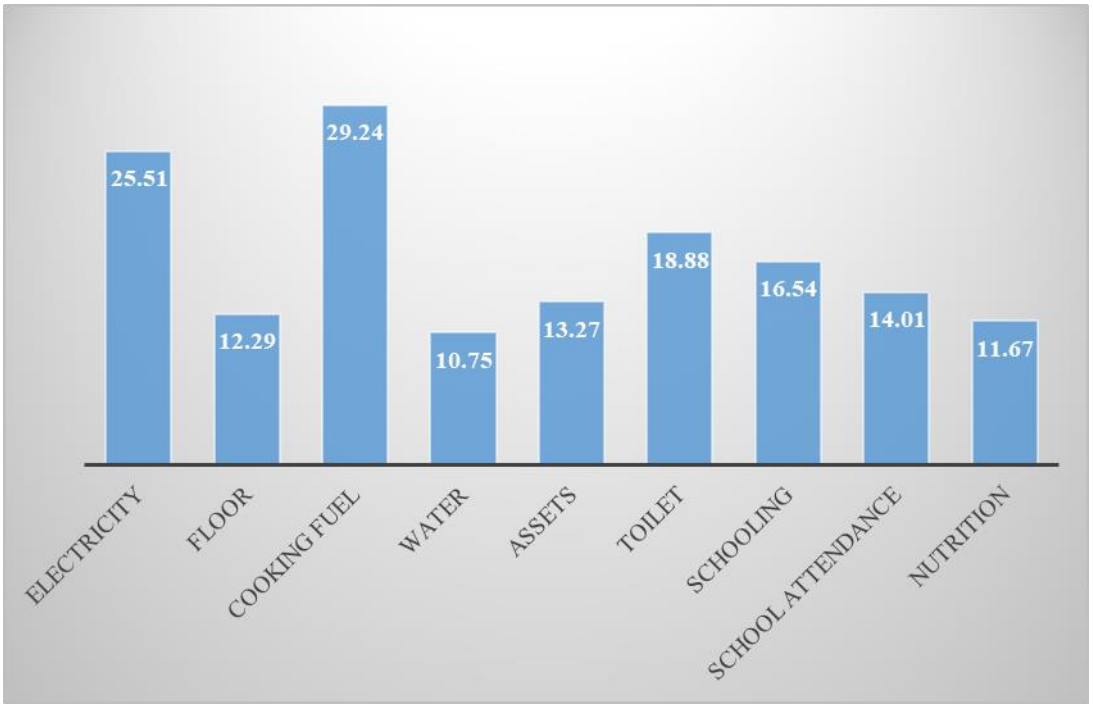


SOURCE: AUTHOR'S CONSTRUCTION

The censored headcount ratio (the percentage of people who are MPI poor and are deprived in each indicator). Figure 2 represents the proportion of the population residing in households that are multidimensionally poor and who are also deprived in that indicator. It shows that 29.24 percent of the population are multidimensionally poor and are also deprived in cooking fuel (they live in households that use solid fuel as main source of cooking fuel), also 25.51 percent of the population are multidimensionally poor and are also deprived in electricity (they live in households that do not have access to electricity). Over eighteen percent of the households are poor and do not have adequate sanitation or toilet facilities. Also over

sixteen percent of households do not have anyone who has completed five years of schooling, and 14.01 percent of households are poor and deprived in school attendance.

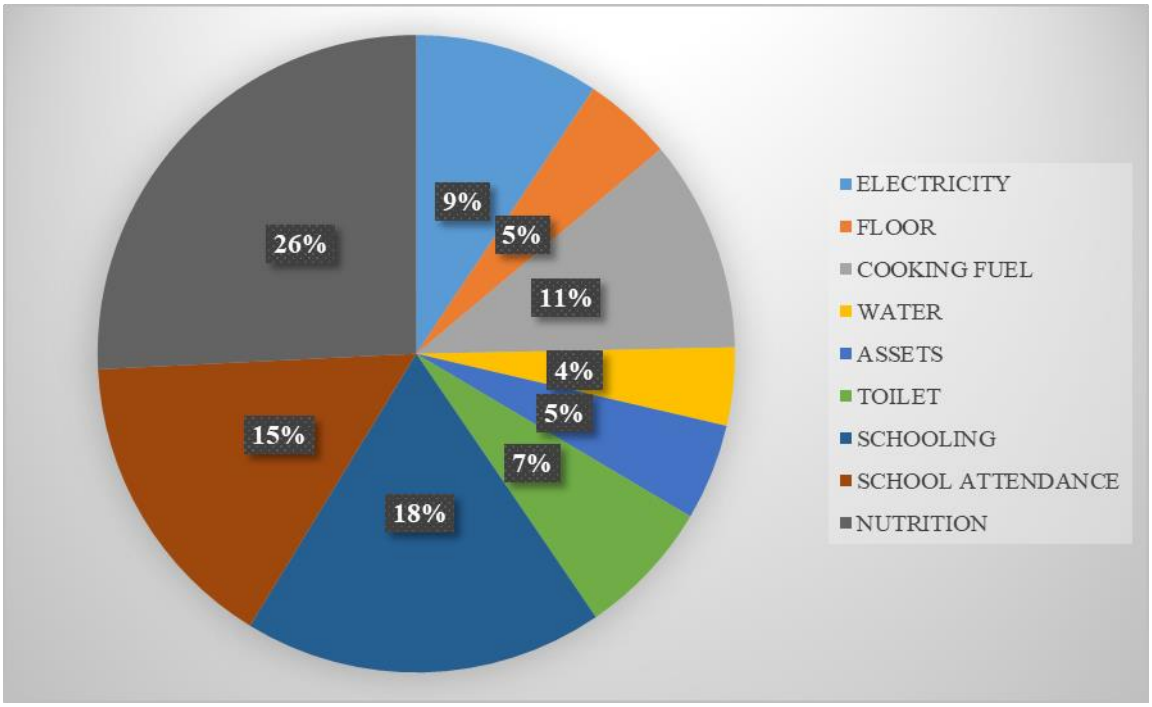
Figure 2: NATIONAL CENSORED HEADCOUNT (%)



SOURCE: AUTHOR'S CONSTRUCTION

It is useful to see the percentage contribution of each of the nine (9) indicators to overall multidimensional poverty across The Gambia. The graphic of percentage contribution applies the weights on each indicator in order to show the composition of poverty in The Gambia. Recall the weights on health and education indicators are much higher than those on the standard of living indicators, so the deprivations in those indicators contribute relatively more to overall poverty. Figure 3 shows that the largest contribution to national poverty is deprivations in nutrition (26%), followed by schooling (18%) and school attendance (15%). If aggregated by dimensions, the largest contribution is due to standard of living (41%). The health and education dimensions contribute 26 percent and 33 percent, respectively.

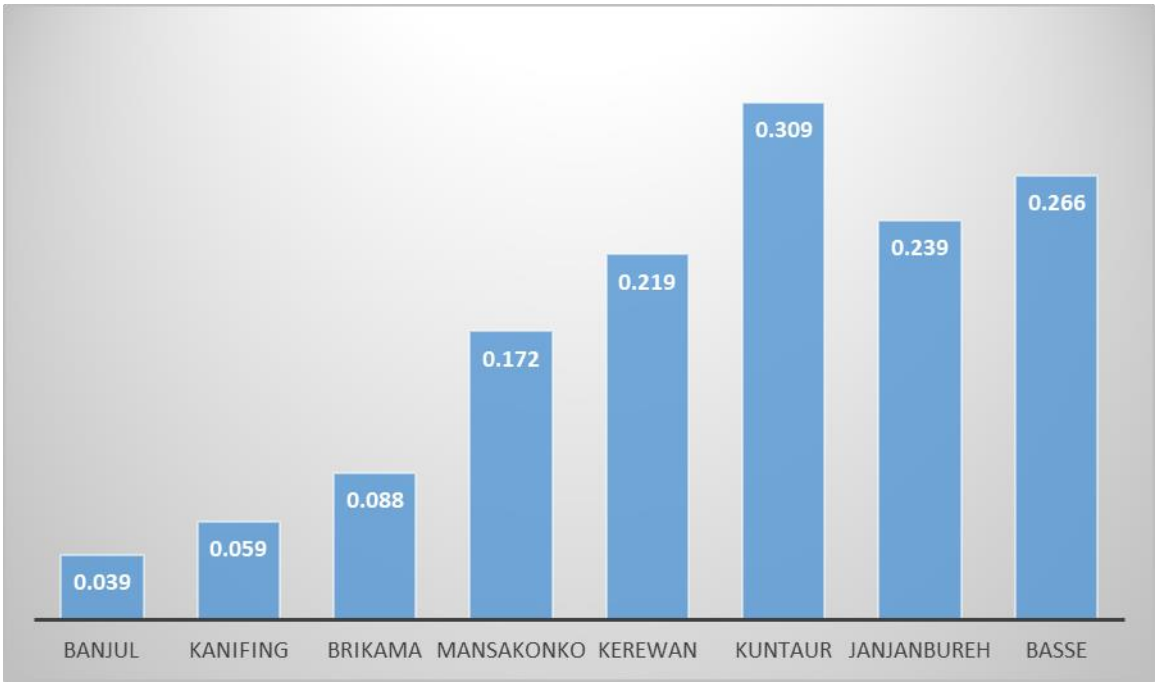
Figure 3: PERCENTAGE CONTRIBUTION TO NATIONAL MPI BY INDICATOR



SOURCE: AUTHOR'S CONSTRUCTION

Figure 4 provides a graphical illustration of the level of MPI in each Local Governement Area. Recall that because of the properties of decomposability afforded by the Alkire Foster method, we are able to explore the dimensional composition of the MPI not only at the national level but also by Local Government Area. In the case of The Gambia, the decomposition by Local Government Area is particularly important as the composition of poverty varies quite significantly across Local Government Areas.

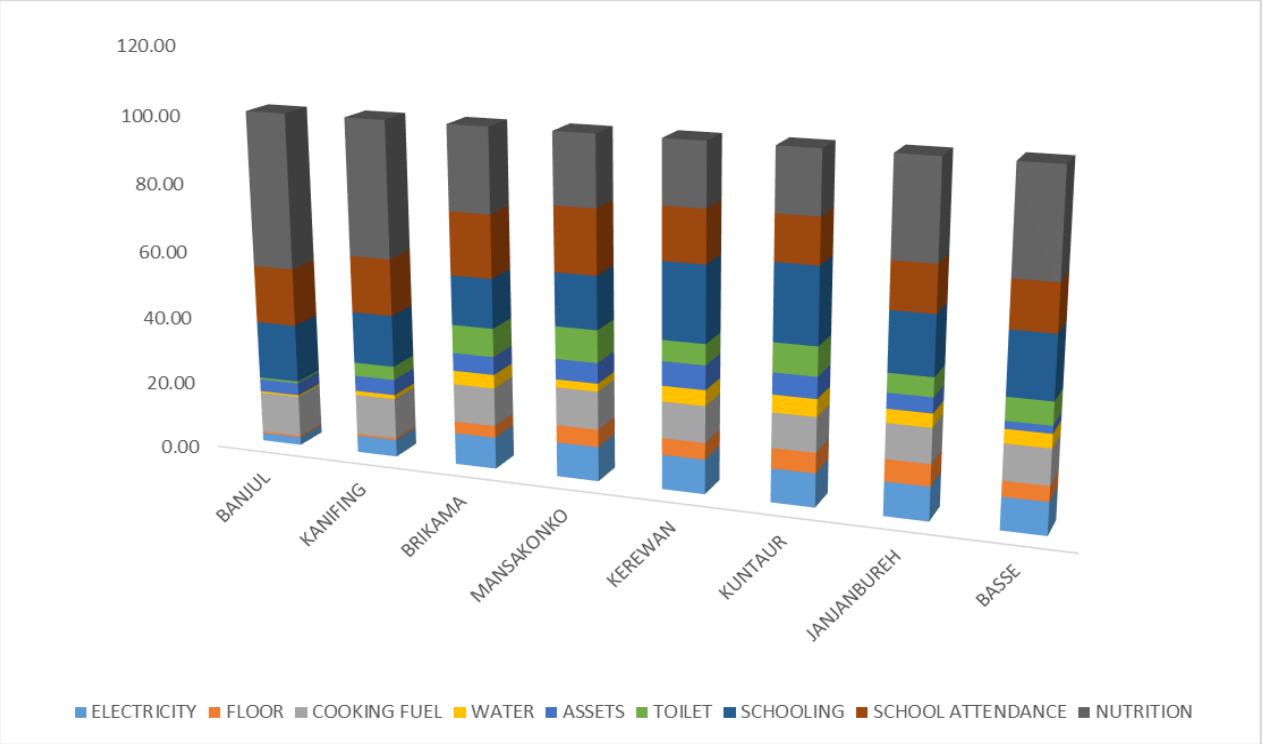
Figure 4: MPI LEVEL BY LOCAL GOVERNMENT AREA



SOURCE: AUTHOR'S CONSTRUCTION

Figure 5 illustrates the percentage contribution of each indicator to poverty for each Local Government Area. We do this so that it is easier to read the compositions of Local Government Area having relatively low poverty levels. Deprivations in nutrition are highest in Banjul, Kanifing, Basse and Janjanbureh, and flooring deprivation is lowest in Banjul and Kanifing and highest in Janjanbureh, Kuntaur and Mansakonko. The toilet deprivations overall are highest in Mansakonko, Kuntaur and Brikama, whereas Mansakonko, Kerewan and Janjanbureh have most deprivations in electricity followed by Kuntaur. Thus we can see that the policy response to multidimensional poverty as suggested by the MPI in these various Local Government Areas would be distinct. Naturally because of the small weights assigned to the living standard indicators, the contributions of these indicators' deprivation are relatively less visible, and deprivation in these indicators are generally lower in all Local Government Areas compared to the other indicators in education and health dimensions.

Figure 5: PERCENTAGE CONTRIBUTION BY INDICATOR TO MPI BY LOCAL GOVERNMENT AREA



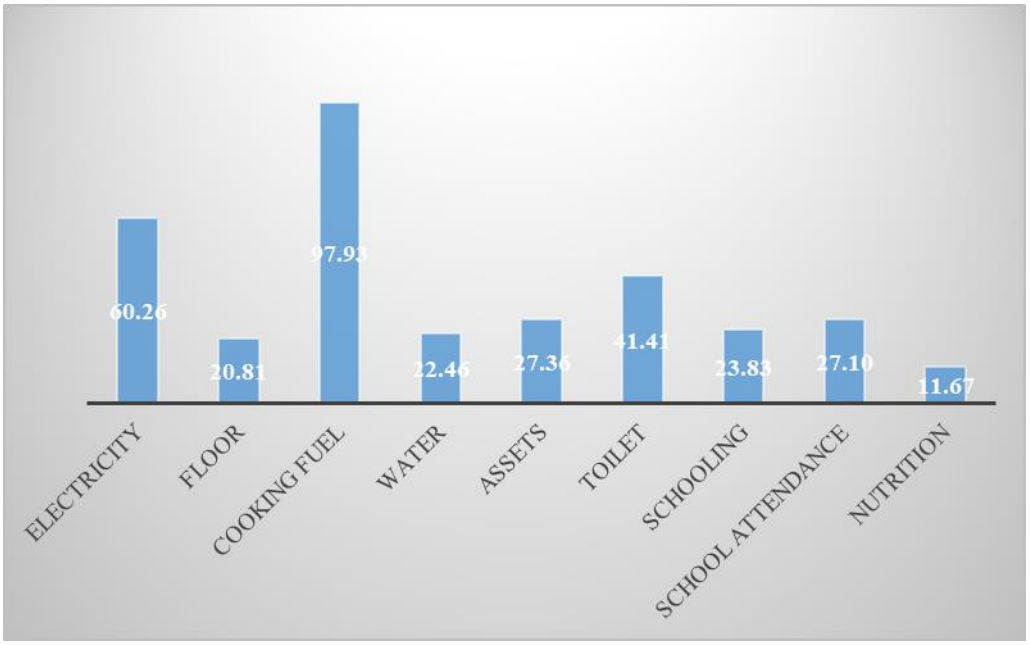
SOURCE: AUTHOR'S CONSTRUCTION

4.2. RAW HEADCOUNTS

Before analyzing the joint distribution of deprivations using the Alkire-Foster method, an examination of each of the indicators included in the multidimensional poverty index provides a sense of raw (or uncensored) level of deprivation in each dimension in 2013.

We take a moment next to describe all of the people who are deprived in each of the 9 indicators, including those that are deprived in a given indicator but non-poor overall. The deprivations are highest in cooking fuel followed by electricity, toilet (sanitation), assets, school attendance and schooling, then water. Figure 6 is important because it suggests that attention to cooking fuel, electricity and toilet (sanitation) will be required more widely than just among the poor. The term 'raw' headcounts refers to the fact that this preliminary chart displays all deprivations and not just those among the poor. Recall that to be multidimensionally poor, a household has to experience deprivations in 34 percent of dimensions. In a number of cases, people may be deprived in one or two indicators but not multidimensionally poor. For example, we see that over 97 percent of Gambians do cook with solid fuels as their main source of cooking fuel and over sixty percent do not have electricity (weighted at 1/18 each), but this does not mean that each of the persons are poor.

Figure 6: NATIONAL RAW HEADCOUNTS (%)



SOURCE: AUTHOR'S CONSTRUCTION

4.3. MULTIDIMENSIONAL POVERTY ESTIMATES UNDER DIFFERENT IDENTIFICATION CUTOFFS (K)

Table 6 shows the multidimensional poverty headcount ratio (H), the average deprivation level of those identified as multidimensionally poor (A), and the MPI for different cutoffs (k). As k increases, the multidimensional poverty headcount decreases, as does M0; however, the average deprivation level of those in poverty increases. It is worth noticing that, at 80% or more, multidimensional poverty deprivation is negligible (that is, in 2013 almost no one in The Gambia was deprived in 80% or more of the weighted indicators at the same time). When the poverty cutoff (k) is set at 34%, 29.32% of the population is classified as multidimensionally poor, with an average level of deprivation of 51.46%. The main drivers of multidimensional poverty are the higher levels of deprivation in all the three dimensions.

Table 6: MPI AND POVERTY HEADCOUNT RATIO BY DIFFERENT POVERTY CUTOFFs

POVERTY CUTOFFs (K)	INCIDENCE (H)	INTENSITY (A)	MPI
10	81.82	32.30	0.264
20	60.90	38.63	0.235
30	37.50	47.51	0.178
40	21.44	56.08	0.120
50	15.20	60.87	0.092
60	7.18	70.17	0.050
70	3.13	78.83	0.025
80	1.00	88.53	0.009
90	0.30	95.55	0.003
100	0.06	100.00	0.001
SOUREC: OWN CALCULATION			

Table 7 provides a disaggregation by sex to evaluate whether there are any differences in multidimensional poverty between male and female. The results show that there are no major differences between female and male: female are slightly more deprived than male (51.57 versus 51.34 average deprivations among the multidimensionally poor) and their headcount is about one percentage point above the average headcount for female.

TABLE 7: MULTIDIMENSIONAL POVERTY ESTIMATES BY SEX

TABLE 7: MULTIDIMENSIONAL POVERTY ESTIMATES BY SEX									
K=34%	TOTAL			URBAN			RURAL		
SEX	H	A	M0	H	A	M0	H	A	M0
MALE	28.54	51.34	0.147	13.09	47.55	0.062	44.72	52.50	0.235
FEMALE	30.06	51.57	0.155	13.93	47.21	0.066	45.72	52.86	0.242
SOURCE: OWN CALCULATION									

Table 8 shows each indicator's censored deprivation for all Local Government Areas. This information is crucial for policymaking, since it sheds light on the difficulties faced by the poor in different parts of The Gambia. It has the potential to guide policies toward being targeted to each Local Government Area specifically based on those deprivations that people experience there. This is particularly important if deprivation levels differ between Local Government Areas.

For example, as noted previously, Kuntaur has the highest multidimensional poverty headcount; additionally, it has the highest level of electricity, floor, water, asset, toilet, schooling and school attendance deprivations, with a 55.22%, 33.08%, 56.88%, 28.49%, 35.05%, 47.48%, 41.485 and 24.74% rate of deprivation respectively among the multidimensional poor.

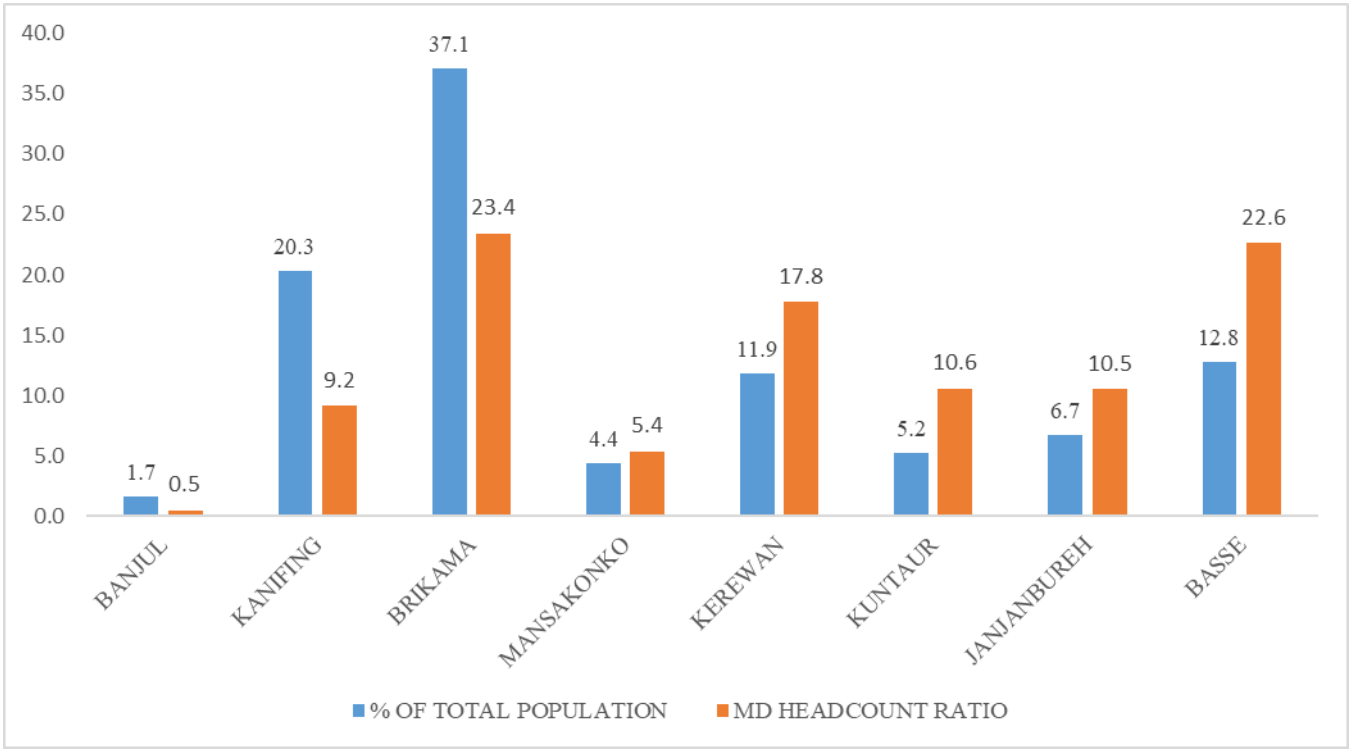
TABLE 8: CENSORED DEPRIVATION OF EACH INDICATOR BY LOCAL GOVERNMENT AREA

INDICATOR	ELECTRICITY	FLOOR	COOKING FUEL	WATER	ASSETS	TOILET	SCHOOLING	SCHOOL ATTENDANCE	NUTRITION
BANJUL	1.58	0.33	8.49	0.35	2.56	0.41	3.97	3.96	5.33
KANIFING	5.33	0.60	12.70	1.34	4.85	4.25	5.38	5.92	7.11
BRIKAMA	14.76	5.63	17.76	6.40	8.37	13.18	7.66	9.78	6.52
MANSAKONKO	31.61	16.09	34.77	7.34	18.70	29.61	16.15	19.69	10.76
KEREWAN	40.04	19.23	42.21	18.11	27.93	24.08	29.41	20.28	12.15
KUNTAUR	55.22	33.08	56.88	28.49	35.05	47.48	41.48	24.74	16.99
JANJANBUREH	42.90	27.45	44.00	17.23	19.29	23.92	24.82	19.42	20.45
BASSE	45.69	21.33	49.82	19.42	10.46	31.78	29.14	21.78	24.51
SOURCE: OWN CALCULATION									

According to the Population Census data, The Gambia had a total population of 1.88 million in 2013. Figure 9 shows the multidimensional poverty headcount by Local Government Area coupled with their population's weight in The Gambia. About 37% of the population is concentrated in the LGA Brikama, while the other 63% is distributed throughout the country. The highest concentration after Brikama is found in Kanifing and Basse, which are home to 20.3% and 12.8% of the total population respectively.

As discussed above, Kuntaur has the highest prevalence of multidimensional poverty, with a 57.32% headcount ratio; nonetheless, this LGA represents only 5.2% of the population. Brikama LGA has the highest number of multidimensional poor, with 122625 individuals identified as such–thus accounting for 23.4% of the multidimensional poor in the country. The Basse LGA follows with 118351 individuals, then Kerewan with 92997 (22.6% and 17.8% of the multidimensionally poor respectively). More than 60% of the multidimensionally poor in The Gambia are located in these three LGAs.

FIGURE 7: MULTIDIMENSIONAL POVERTY HEADCOUNT RATION AND POPULATION DISTRIBUTION BY LOCAL GOVERNMENT



SOURCE: AUTHOR'S CONSTRUCTION

CHAPTER FIVE

CONCLUSION AND POLICY IMPLICATIONS

Measuring poverty just based on monetary terms fails to account for numerous deprivations people are subject to, and so affords inadequate information for policymaking. However, empirical strategies to measure poverty multidimensionally have emerged.

Using the most recent Gambia Demographic and Health Survey (GDHS) dataset available for The Gambia, this study estimates the level of multidimensional poverty for 2013 using the Alkire-Foster method. It provides an overview of the national poverty rate and its makeup in terms of different deprivations. Additionally, it analyzes multidimensional poverty at the Local Government Area level and finds large differences between LGAs in terms of multidimensional poverty incidence and its composition. While most LGAs have some access to basic services, others lag behind. Some are in need of better housing and access to services, while others might benefit from an improvement of health services to prevent illness. It is clear that a more tailored approach is needed to address these issues, and incorporating this methodology as a complement to the national income poverty estimates certainly provides both policymakers and citizens with more information on the level of development of the country and its LGAs. Information related to different dimensions of poverty could help tailor poverty alleviation programs according to the needs of the population in different areas of the country. The study illustrates the utility of the MPI in three ways. First, this index could be used to improve targeting of social assistance (in specific sectors), focusing on those with multiple deprivations. It might be the case that a family has sufficient income to place them outside the realm of income poverty, thus excluding them from social assistance; however they could be experiencing several deprivations in terms of access to basic services or ill health.

A multidimensional targeting system based on the Alkire-Foster methodology could help identify social program beneficiaries in a way that explicitly addresses their particular deprivations. Second, the above methodology could also be used to create new and enhanced poverty maps using the census data. Poverty mapping helps determine what type of resources are needed in different areas of the country, as well as helping to keep track of LGA changes in each indicator across time. Third, as this methodology can be easily tailored and disaggregated, future research could be conducted looking at specific groups of interest such as indigenous groups, women, children, etc. In this way, development policy and poverty alleviation programs from sectoral ministries and local governments could reach those individuals at risk of poverty.

REFERENCES

Abu-ismail, K., El-laithy, H., Armanious, D., Ramadan, M., Khawaja, M., & Nations, U. (2015). Multidimensional Poverty Index, (September).

Acar, A. (2014). the Dynamics of Multidimensional Poverty in Turkey, (October). Retrieved from https://ideas.repec.org/p/bae/wpaper/014.html

Adeoti, A. (2014). Trend and determinants of multidimensional poverty in rural Nigeria. *Journal of Development and Agricultural Economics*, *6*(5), 220–231. https://doi.org/10.5897/JDAE2013.0535

Adetola, A., & Olufemi, P. (2012). Determinants of Child Poverty in Rural Nigeria: A Multidimensional Approach. *Global Journal of Human-Social …*, *12*(12), 1–17. Retrieved from http://socialscienceresearch.org/index.php/GJHSS/article/view/403

ALKIRE, S. (2009). The 3rd OECD World Forum on " Statistics , Knowledge and Policy " Charting Progress , Building Visions , Improving Life MEASURING POPULATION HAPPINESS TO INFORM PUBLIC POLICY. *October*, (October), 1–11.

Alkire, S., Apablaza, M., Chakravarty, S., & Yalonetzky, G. (2013). Measuring Chronic Multidimensional Poverty: A Counting Approach. *OPHI Working Paper 75, University of Oxford*, 0–3.

Alkire, S., & Roche, J. M. (2011). Beyond Headcount: Measures that Reflect the Breadth and Components of Child Poverty. *OPHI Working Paper 45*, (45), 1–26. Retrieved from http://www.ophi.org.uk/new-approach-to-child-poverty/

Bérenger, V. (2016). *(Multidimensional Poverty) - MEASURING MULTIDIMENSIONAL POVERTY IN THREE SOUTHEAST ASIAN COUNTRIES USING ORDINAL VARIABLES*. https://doi.org/10.1017/S0020818300006032

Bérenger, V. (2017). Using ordinal variables to measure multidimensional poverty in Egypt and Jordan. *Journal of Economic Inequality*, *15*(2), 143–173. https://doi.org/10.1007/s10888-017-9349-7

Cavapozzi, D., Han, W., & Miniaci, R. (2015). Alternative weighting structures for multidimensional poverty assessment. *Journal of Economic Inequality*, *13*(3), 425–447. https://doi.org/10.1007/s10888-015-9301-7

Datt, G. (2013). Making every dimension count: multidimensional poverty without the "dual cut off." *Monash University, Department of Economics*, 1–24. Retrieved from http://www.buseco.monash.edu.au/eco/research/papers/2013/3213makingdatt.pdf

Dehury, B., & Mohanty, S. K. (2015). Regional Estimates of Multidimensional Poverty in India. *Economics: The Open-Access, Open-Assessment E-Journal*. https://doi.org/10.5018/economics-ejournal.ja.2015-36

Dhongde, S. (n.d.). Multi-dimensional Poverty in the U.S.

El Bouhadi, A., Elkhider, A., & Kchirid, E. M. (2012). The multidimensional approach to poverty measurement: Case of morocco. *Applied Econometrics and International Development*, *12*(2), 135–150.

Gordon, D., & Nandy, S. (2012). Global Child Poverty and Well-Being: Conclusion. *Global Child Poverty and Well-Being: Measurement, Concepts, Policy and Action*, *10*, 567–574. https://doi.org/10.1332/policypress/9781847424822.001.0001

Government of Nepal National Planning Commission. (2018). Nepal Multidimensional Poverty Index 2018: Analysis Towards Action.

Le, H., Nguyen, C., Phung, T., Bui Linh, N., Hoang Nga, V., Thi Lien Phuong, P., … Khanh, D. (n.d.). Volume 35, Issue 4 MULTIDIMENSIONAL POVERTY: EVIDENCE FROM VIETNAM, *35*(4), 2820–2831.

Leite, G. P., & Teles, L. R. (2011). Approaching the Measurement of Multidimensional Poverty in Minas Gerais State, 1–3.

Lustig, N. (n.d.). Multidimensional Indices of Achievements and Poverty : What Do We Gain and What Do We Lose ? Working Paper 262 August 2011, (August 2011).

Muller, C., Kannan, A., & Alcindor, R. (2016). Multidimensional Poverty in Seychelles Working Papers / Documents de travail Multidimensional Poverty in Seychelles.

National Statistics Bureau. (2014). *Bhutan Multidimensional Poverty Index 2012* (Vol. 19). Retrieved from http://www.nsb.gov.bt/publication/files/pub0ll1571bt.pdf

Nawar, A.-H. (2014). Multi-dimensional poverty index and tackling interlocking deprivations in the Arab States, (125). Retrieved from http://hdl.handle.net/10419/119807

OXFAM. (2013). A multidimensional approach for measuring resilience, 1–22.

Palić, I., & Grofelnik, B. (2017). The long-run impact of personal income taxation on economic development : Evidence from Croatia. *Croatian Review of Economic, Business and Social Statistics (CREBSS)*, *3*(1), 35–44. https://doi.org/10.1515/crebss

Ravallion, M. (2011). On multidimensional indices of poverty. *Journal of Economic Inequality*, *9*(2), 235–248. https://doi.org/10.1007/s10888-011-9173-4

Robano, V., & Smith, S. C. (2014). Multidimensional Targeting and Evaluation: A General Framework with an Application to a Poverty Program in Bangladesh. *OPHI Working Paper*, *65*(7593). Retrieved from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2325851

Santos, M. E., & Ura, K. (2008). Multidimentional Poverty in Bhutan: Estimates and Policy Implications. *OPHI Working Paper 14*, 1–23. Retrieved from http://www.dspace.cam.ac.uk/handle/1810/227022

Solomon, J. S. (2012). The Use of Multidimensional Poverty to Proxy Chronic Poverty: An Application to Brazil.

Suppa, N. (2015). Towards a Multidimensional Poverty Index for Germany. *OPHI Working Papers 98*, 1–47. https://doi.org/10.1007/s10663-017-9385-3

Wambugu, A. (2010). Multidimensional Poverty in Kenya: Analysis of Maternal and Child Wellbeing. *In 8th Poverty and Economic Policy (PEP) General Meeting, Dakar, Senegal. June 2010*, 1–54. Retrieved from http://anciensite.pep-net.org/fileadmin/medias/pdf/files_events/8th-PEPmeeting2010-Dakar/papers/Anthony_Wambugu.pdf

Yu, J. (2013). Multidimensional Poverty in China: Findings Based on the CHNS. *Social Indicators Research*, *112*(2), 315–336. https://doi.org/10.1007/s11205-013-0250-x

Zahra, K., & Zafar, T. (2015). Marginality and Multidimensional Poverty: A Case Study of Christian Community of Lahore, Pakistan. *Pakistan Journal of Commerce and Social Sciences*, *9*(2), 322–335. Retrievedfromhttps://www.researchgate.net/profile/Kanwal_Zahra/publication/303333161_Marginality_and_Multidimensional_Poverty_A_Case_Study_of_Christian_Community_of_Lahore_Pakistan/links/57440d8308ae9ace841b45b7.pdf%5Cnhttp://media.proquest.com.ezp.lib.unimelb.edu.au/med