An Assessment of Multidimensional Poverty Trends in Ghana

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Abstract

This study aims at establishing the trends in multidimensional poverty in Ghana from 2011 to 2020 using intertemporal and counting approach. Alkire and Foster methodology was applied to identify and analyse the data. The study adopted the global multidimensional poverty indicators made up of three dimensions – health, education, and standard of living – and the ten indicators of which equal weights are attached to each dimension, and the same weights for the indicators within each dimension. It was found that Ghana did very well in reducing multidimensional poverty in all the six indicators within the standard of living dimension both in absolute and relative terms. However, the nation increased its multidimensional poverty in education and health dimensions. The Northern region continues to be the poorest region with the lowest reduction in multidimensional poverty in absolute and relative terms. Overall, multidimensional poverty reduced significantly both in absolute and relative terms at the national and regional levels. As compared with Sub-Saharan Africa, Ghana performed better in decreasing multidimensional poverty than the mean of the sub-region in almost all the dimensions and indicators, both in absolute and relative terms. Government should sustain this feat and improve upon it to eliminate poverty in all its forms by 2030 as envisaged by Sustainable Development Goal 1. Government must invest heavily in education and health as well as agriculture and rural development to reduce poverty. Strategy that targets the poorest regions should be implemented to reduce poverty.

Keywords: Multidimensional poverty, Headcount poverty, Monetary poverty, Trends, Ghana.

Introduction

The multidimensional nature of poverty makes it complicated subject both conceptually and in approach in a dynamic society. How we appreciate poverty is largely determined by how we measure it, and the way we analyze it influences the policies developed to address it [1]. In this respect, the methodology used to measure poverty is of great importance to enable us to grasp the essential characteristics and type of poverty encountered. Some researchers and policy makers have defined poverty using income or consumption levels [2-4] has expressed the inadequacy of income measurement of poverty because not all human needs can be provided in the market or done so efficiently. The different capability of households to translate income into

"functioning" makes monetary measurement a weaker indicator for measuring poverty on a fairgrounds. The income measurement was assumed to adequately capture whether someone can fulfill their basic physiological needs [3, 5]. The poor, however, moves a step higher than income to express how they feel about poverty which incorporates education, health, shelter, security, jobs and many more. Moreover, the various challenges confronting the poor cannot be expressed in a single indicator.

The scale and trends of income poverty may not correspond with trends in other important variables such as child mortality, education, shelter, malnourishment, and good drinking water, which are necessities for life [6]. Someone can therefore be income poor but not multidimensionally poor, likewise be income

non-poor but multidimensionally poor. Available data indicate that 45.6% and 23.4% of Ghanaians are multidimensionally and consumption expenditure poor respectively, showing a difference of 22.2 percentage points [7-8]. 19.3 percent of Ghanaians are simultaneously consumption and multidimensionally poor, while 4.1 percent experience consumption poverty but not multidimensional poverty and 26.3 percent are multidimensionally poor but do not experience consumption expenditure poverty [7-8]. Poverty can also be measured using subjective approach or objective approach [9-11]. Subjective poverty is where one assesses his/her situation and considers himself/herself poor in relation to a reference group or unable to make a decent living based on his/her minimal income [10-11]. The objective measurement uses either absolute approach or relative approach.

Various theories such as monetary [2], the basic needs [12-13], the primary goods [14], and capacity [15], have been used to explain the concept of poverty. Poverty and income disparity can be viewed from different angles [16] as being monetary and non-monetary. Measurement using money is based on income or expenditure, but other development indicators are used for non-monetary measurement. The most appropriate determinants of multidimensional poverty have been the asset indices adapted from the Demographic Health Surveys (DHS) [17-19]. This study aims at analyzing the relative changes and directions of multidimensional poverty in Ghana since 2011 by looking at data from UNDP Global Multidimensional Poverty Indices and Ghana Multidimensional Poverty indicators using intertemporal trend estimations.

The money measurement poverty can be assessed using relative or absolute measurements. The absolute measurement uses a poverty parameter which indicates the needed amount of resource to acquire a given quantity of necessities for survival or to meet one's food intake sufficient to satisfy the international benchmark of 2100 calories per day [20, 9, 21]. Relative poverty measurement identifies the lowest (e.g 20% or 40%) quintiles of the population using a relative poverty parameter or an arbitrary line of a proportion of the average or median income of each person [10].

According to [22], less developed economies globally have experienced a meaningful reduction in poverty in its various forms recently. Globally a considerable advancement in child mortality [23-24], availability of potable water and hygiene [25-26], ability to attain basic education [27-29] and income poverty [30-31] has been achieved. Significant improvement has been achieved in multidimensional poverty reduction in Ghana as well. The multidimensional poverty incidence in Ghana fell by 9 percent from 55 percent in 2011 to 46 percent in 2017. The severity of poverty also dropped (from 54.2% in 2011 to 51.7% in 2017) indicating that the gain is 'pro-poor' [7]. The MPI dropped by 0.062 from 0.298 in 2011 to 0.236 in 2017.

The global MPI indicates the general assessment of poverty globally in all its dimensions and follows up on performances towards Sustainable Development Goals (SDG) 1, which deals with removing poverty in all its forms [26]. The objective of SDG is to "carry along everyone" while alleviating poverty [26, 28, 32-33]. The Alkire and Foster methodology was used to derive the global multidimensional poverty [3, 5, 29, 34]. Data for computing global MPI are derived from over a hundred countries which are sourced from the Demographic Health Surveys (DHS), Multiple Indicator Cluster Surveys (MICS) [34] and country specific surveys such as Ghana Living Standards Survey [35]. Three dimensions and ten indicators constitute global MPI, however, the Multidimensional Poverty measurement in Ghana (2017/2018) classified MPI into twelve indicators and three dimensions [35]. This study adopts the global MPI as it compares the performance of Ghana against that of sub-Saharan Africa region. Equal weights are placed

on each dimension and for each indicator within each dimension. [36] expresses that the weighting mechanism selected is influenced by theoretical concepts rather than data induced methodology. In effect, people are identified as impoverish if they do not satisfy the deprivation criteria in any of the indicators. The nature of deprivation a person experiences is used to determine the MPI [34, 37].

This paper examines the nature and direction in MPI for Ghana between 2011 and 2020 using a harmonized global MPI which makes comparison of MPI dimensions and indicators over time possible. The purpose of SDG 1 is to eliminate poverty in all its dimensions across the globe [28] and Target 1.2 requires each nation to reduce at least by half poverty in all its dimensions by 2030 for all its people based on the country's definition of poverty [28, 31, 32]. Tracking this changes requires comparisons over time the movements in the MPI indicators as presented in this paper.

The study therefore seeks to examine how multidimensional poverty in Ghana has changed between 2011 and 2020, the magnitude of change, contribution of each indicator to MPI reduction, and Ghana's comparative performance within the sub-region in absolute and relative terms.

The methodology adopted to achieve the objectives of the study is [5] because it is clear and simple in relation to other methods of estimating MPI [38]. While we have extensive writings on monetary poverty on Ghana, not much has been written about non-monetary poverty. This study attempts to throw more light on the little known concept of multidimensional poverty in Ghana from 2011 which coincides with the period Ghana started measuring multidimensional poverty. The study further adopts decomposition analysis to illustrate the variations in multidimensional poverty by comparing the movements across components of poverty which are headcount and intensity and among the three dimensions.

The paper presents two distinct contributions to literature. In the first place, earlier studies on MPI in Ghana deal with only one dimension or the other and how they affect a section of the population [39-43]. This study, however, holistically looks at the trends in MPI from all the dimensions and indicators and their impacts on the entire population. By so doing, it is possible to track successes being chalked and identifies impediments in the country's forward march at eliminating multidimensional poverty in line with SDG 1 [26, 32]. Secondly the study, in the knowledge of the researcher, is the first time the performance of multidimensional poverty components have been measured in relative terms rather than absolute terms in Ghana. This allows for assessing the elasticity of poverty reduction measures to ensure effective allocation of scarce resources to tackling poverty.

The remainder of the study is arranged as follows: the literature review and empirical studies about the subject matter are presented in section 2, section 3 explains the methods and data, the empirical results are analyzed in section 4, and section 5 concludes and suggests policy implications.

Literature Review

The multidimensional nature of poverty makes it complicated subject both conceptually and in approach in a dynamic society. Various theories such as monetary [2] the basic needs [12-13], the primary goods [14], and capability [15], have been used to explain the concept of poverty. The most appropriate concept relating to the multidimensional poverty is Sen's capability approach [15]. The capability concept advocates for dramatic departure from concentrating on the physiological needs to real freedoms enjoyed by the poor [15] which are various combinations of "functioning's" an individual can obtain. The capability concept stresses on the diversity at which individuals based on their personal characteristics such as age, gender, physical conditions, social factors

such as institutions, cultural and social norms, and environmental and other factors, convert "commodities" into "functionings" and "capabilities". It is therefore possible for two individuals with the same level of "means" but have different levels of welfare. The key issue is the "functionings" which is made up of the things one cherishes or "being" [44]. A person's capabilities are assumed, as they are not directly observable [4]. The "functionings" attained are used as a proxy for measuring poverty [44-46].

There have been numerous studies on how multidimensional poverty has transformed over the years. [47] indicates that to assess whether nations are reducing their poverty levels in line with the SDGs, one must compare the MPI levels across time and identify which dimensions have experienced a significant reduction and which have not. [48] did a research on multidimensional poverty trends and levels in Africa south of Sahara and observed a statistically significant drop in multidimensional poverty in the sub-region. [47] used Multidimensional Poverty Index (MPI) data from 34 developing economies and conclude that multidimensional poverty has been decreasing. [37] country analysis on multidimensional poverty confirms that India and Cambodia experienced the rapid drop in MPI values. [49] examined data from 1999 to 2006 to establish trends of multidimensional poverty in India and concluded that an impressive drop in national poverty as well as all the dimensions have been realized. [50] identified transitory poverty in rural Ethiopia. [51] analyzed multidimensional poverty trends in Chad from 2003 to 2011 and came to the realization that multidimensional poverty has risen marginally. [52] applied harmonized intertemporal trends for data from 80 nations and observed that meaningful drop in multidimensional poverty in the form of dispossessing in health, education, and living standards has been obtained. Again, [53, 54], and [27] identified meaningful improvement in the multidimensional poverty indicators, as well

as continuing drop in multidimensional poverty. Some studies have been conducted in Ghana on multidimensional poverty. Interestingly the researchers looked at only an aspect or a dimension of multidimensional poverty without comprehensively analyzing multidimensional poverty in all its elements. For instance, data from 2014 Ghana Demographic Health Survey was adopted by [39] to assess the levels of poverty among children and investigated the various groups which existed within the larger group of child poverty. [40] used global MPI to examine changes in impoverishment level for minors from 2010 to 2012, and the influence transfer of cash has on multidimensional poverty among children in Ghana. [41] examined whether rural farmers in Ghana should diversify their means of farming and income sources as a way of solving challenges to their economic circumstances and lessening their exposure to multidimensional poverty.

The effect of multidimensional energy poverty on mental health in Ghana was analyzed by [55] by adopting a two-wave socioeconomic survey. [42] assessed the connection between energy poverty and poverty and to establish whether households who are energy-poor are also income-poor, and the other way round by adopting multidimensional poverty measures. [56] examined the influence of energy poverty on human welfare of Ghanaians. [57] assessed how financial inclusion impacts poverty and those most likely to be exposed to poverty in Ghana, while [58] analyzed the impacts of welfare packages on financial inclusion and how it influences poverty in Ghana. The well-being of migrant and non-migrant workers in cocoa farms in Ghana was analyzed by [43] using multidimensional poverty index. The disaggregated values of global MPI was adopted by [59] to measure multidimensional poverty across ethnic groups in selected regions of developing countries.

Ghana, with the support from IMF has undergone through different programmes in the last forty years to eliminate poverty. Some of

these programmes are Structural Adjustment Programme (SAP) in 1983, Ghana Poverty Reduction Strategy, 2002-2004 (GPRS I), Growth and Poverty Reduction Strategy, 2005-2009 (GPRS II) and the Ghana Shared Growth and Development Agenda, 2009-2013 (GSGDA). The focus of all these is to quicken economic growth with the overall aim of alleviating poverty [60]. The Livelihood Empowerment Against Poverty (LEAP), Capitation Grant, School Feeding Programme, and the Free Senior High School Programme, are some of the social interventions instituted with the objective of lessening poverty faced by the disadvantaged population [35]. One District One Factory, Planting for Food and Jobs, the Nation Builders Corp, the Infrastructure for Poverty Eradication Programme (IPEP), among others are other poverty reduction intervention policies implemented by government ([8].

There are several dimensions to poverty which are depicted by low income, poor nutrition, poor health, no education, insecurity and so on. These different factors may combine in several forms to hold households or entire community in extreme poverty [35]. Following [5] and [61], this paper presents multidimensional poverty trends for Ghana by adopting Akire and Foster methodology which in essence is embedded in Sen's capability concept. The incidence and intensity of poverty as well as the driving forces behind these deprivations will be derived from this methodology. The government and all stakeholders will be informed about the appropriate support needed to bring the poor out of poverty.

Methodology

Conceptual Approaches for Determining Multidimensional Poverty

Multidimensional poverty can be determined using two main methods: marginal method and common or counting method [5]. The marginal method does not apply data found in the joint distribution achievements and therefore every data on links across dimensions are overlooked. [5] indicate that a marginal approach allocates equal degree of poverty to two matrices that provide equal marginal distributions. The marginal approach adopts a deprivation cutoffs procedure which finds persons deprived in a certain dimension. The information about the population is summed to derive a deprivation measure for all the dimensions. The problem about marginal approach is that it does not tell whether individuals are poor or not on a multidimensional level and as such does not align with Sen's identification criteria [4].

The counting method uses Alkire and Foster method [5] by applying a specific deprivation threshold to dimensions upon which individuals below are considered deprived. The counting method demands a specific deprivation cut-off for each indicator, indicating the lowest threshold necessary to be identified as not deprived [62, 63]. Two basic steps are involved; first define the dimensions and the deprivation cut-off, and secondly the poverty cut-off to determine who is multidimensionally poor. The key issue for calculating multidimensional poverty is to trace and analyze variations of MPI variables for a period.

The MPI index is obtained by a two-stage 'double cut-off' procedure [5]. Some minimum satisfaction level is associated with each indicator which is regarded as the deprivation threshold value, indicated as (z_i). An individual (i) is considered deprived if his/her performance in an indicator (x_i), is lower than the threshold value, thus, if $x_i < z_i$, the dummy variable *(I_i)* is 1; and if $x_i \geq z_i$, I_i is zero. Then, select the weights (*w*) for the 'indicators' which sum up to 1, i.e ($\sum_{i=1}^{m} w = 1$). Every dimension has equal weight of one-third and same weights apply to the indicators in each dimension. The computation of deprivation score *(c_i)* is $\sum_{i=1}^{m} w_i I_i$, which falls between zero (0) and one (1).

The next step is to determine a definite cut-off, (k), which stands for the portion of weighted deprivations an individual must suffer before

regarded multidimensionally poor. An individual is classified as poor if $ci \geq k$, where k = 33.33 percent, indicating that an individual's deprivation should not be more than one-third of the weighted indicators before he/she is described as MPI poor. Again, ci(k), which represents the reviewed deprivation mark, is obtained as: if $ci \geq k, ci(k) = ci$; if $ci < k, ci(k) = 0$ [62].

This study adopted Alkire and Foster method (AFM) which compares favourably as against marginal method. The AFM has the benefit of finding people who are multidimensionally poor by using their common deprivations. The AFM is clear and simple to understand and allows for easy comparison over time across countries and regions as compared with other multidimensional poverty measurement indices [38, 5]. This paper follows the footsteps of [46-49, 64] by adopting AFM in analyzing trends of multidimensional poverty in Ghana. The paper involves comparing the intertemporal trends of MPI and its components over a ten-year period using a time series data.

The absolute rate of change of poverty over a given time dimension is essential for comparison. Poverty change over two measurement periods could be because of changes in incidence of poverty (headcount) or intensity of poverty (mean deprivations) or a combined effect of the two [5]. This variation is measured using absolute change over the two periods or the percentage (relative) change over the periods [5]. The simple variation between two period's poverty is the absolute poverty [65]. In this study the four time periods for which data were gathered for analysis are denoted by t_1, t_2, t_3 and t_4 respectively. The same set of parameters are used to compute the trends for each dimension over the periods. The difference in MPI components for two subsequent periods is absolute rate of change and is calculated as:

$$\Delta MPI = MPI(X_{ij}t_2 - X_{ij}t_1) \ (1)$$

Also, for incidence (H) and intensity (A):
$\Delta H = H(X_{ij}t_2) - H(X_{ij}t_1)$ and $\Delta A = A(X_{ij}t_2) -$

$A(X_{ij}t_1)$, where X_{ij} are achievement matrices and t_s are time periods [65].

The initial level is not relevant for measuring absolute change. For instance, a 5 percent drop in H values could imply a drop in H from 80% to 75% or from 25% to 20%.

Any variation in the components of MPI across subsequent time dimensions is assessed using relative rates. The relative rate of change on the other hand is the gap in poverty levels between two time periods expressed as a percentage of the former. This shows the proportion of poverty reduction achieved over the period [65]. Combining absolute and relative changes gives a better understanding of interpretation and analysis of the variations in various multidimensional poverty components at different time periods. The relative rate of change (δ) is calculated for the MPI components as well as for H and A as:

$$\delta MPI = \frac{MPI(X_{ij}t_2) - MPI(X_{ij}t_1)}{MPI(X_{ij}t_1)} \times 100 \ (2)$$

Data

This section underscores the significant elements of the multidimensional poverty index and the datasets from which the trends in MPI components are estimated. Secondary data, mainly from UNDP databases ([28, 24, 26] as well as 2016/17 Ghana Living Standard Surveys (GLSS), 2011 and 2017/18 Multiple Indicators Cluster Surveys (MICS), and 2014 Demographic Health Surveys (DHS) conducted over the ten-year period (2011 – 2020) were gathered for the study. The UNDP and Oxford Poverty and Human Development Initiative (OPHI) have since 2010, produced an internationally comparable global MPI, which are used to measure multidimensional poverty [24, 34].

To ensure data reliability and comparability the time frame for the study was chosen to reflect the periods whereby large scale data was collected on human and social development through multiple indicator cluster surveys in 2011. The study focuses on the period starting around 2011 until the 2017/18 where the most

recent data was taken. These data points transcend period of MDGs into SDGs which all have poverty reduction as the core objective. The agenda for MDG 1 was universally agreed in 2001, the reference period however, dates to 1990. Measuring poverty trends using MDGs' adopting period is appropriate as the whole world measures poverty using the same standard. Again, data availability informed the choice of the time frame as it enables the utilization of all the data at the disposal of the researcher, whereas data on previous periods are either non-existent or limited.

The deprivation scores using global MPI are aggregated from the ten deprivation indicators to generate MPI [66] and adjusted headcount ratio (M_0) [5]. The deprivation score is used to find the poor, and the population estimates of the poor are obtained from sampled household surveys [66]. Where a person is deprived in at least one-third of the MPI indicators, he/she is classified as multidimensionally poor [24, 35, 65]. That is, where the weighted deprivation index mark of someone is 33.33% or more, that individual is counted as MPI poor, if 50% or more the individual is in severe poverty, and if the index falls between 20% and 33.33%, the person is vulnerable to poverty [7, 27, 34, 35, 37, 65].

The deprivation, made up of ten indicators are placed under three dimensions: health, education and living standards. The Millennium Development Goals (MDG) served as an inspiration for developing the deprivation dimensions and indicators [66], of which five indicators have been fine-tuned to meet the desires of Sustainable Development Goals (SDGs) [53, 65]. The indicators are expressed in binary terms taking the values of one (1) if the critical conditions are satisfied, and zero (0) if not satisfied [67]. For example, in terms of education, if no person in a household has finished a minimum of six years in school, that household is considered deprived and scores zero for years in schooling. Likewise, if a household has experienced death of a child under 18, five years before the survey, they score

zero for child mortality, if not they score one. A household which shares or does not have a sanitation facility is said to be deprived in terms of sanitation and scores zero under that indicator. The other indicators are nutrition, school attendance, cooking fuel, drinking water, electricity, housing, and assets. The dimensions are given equal weights likewise the indicators within each dimension, signifying that equal importance is attached to every component of the multidimensional poverty.

Analysis of Data

Table 1 and Figure 1 present the deprivations of individuals in each of the indicators and the progress made over the study period. Overall, the MPI value dropped marginally by 0.04, from 0.153 in 2011 to 0.111 in 2020. In relative terms the drop is significant at 27.5%. This means that there is an overall fall in both the headcount and intensity of poverty in all the indicators over the period. Specifically, the contributions of the indicators to poverty reduction have been mixed. Nutrition, child mortality, years in schooling and school attendance are variables which contributed to poverty. Nutrition increased significantly with 3.7% in absolute terms from 2011 to 2020, but in relative terms the increase is 25%. Child mortality contributed marginally by 0.1% in absolute terms and 2.04% in relative terms over the ten-year period. Number of years in school and school attendance appear to contribute greatly to poverty. School attendance and years of schooling contributed 3.10% and 1.80% respectively to poverty. In relative terms school attendance and years in schooling contributed 35.6% and 10.6% respectively to poverty.

The other variables, cooking fuel, sanitation, housing, electricity, drinking water and assets contributed significantly to reducing poverty over the study period. In absolute terms, cooking fuel contributed 19.3%, sanitation 19%, housing 14.1%, electricity 18.2%, drinking water 12.9% and asset 9% reductions in multidimensional poverty over the ten-year period. The relative

drops have been phenomenal over 60% for each of the dimensions. Cooking fuel dropped 61.3%, housing 67.5%, sanitation 62.5%, electricity 77.1%, drinking water 67.5% and assets 69.2%. The significant reductions in these indicators resulted in significant drop in poverty headcount by 5.7% and poverty intensity by 2.8% at the same period.

The overall poverty headcount decreased from 31.8% in 2011 to 26.1% in 2020 and that of intensity of deprivation from 47.9% to 45.1% over the ten-year period. The trend analysis indicates that 2018 – 2020 performances followed the same pattern as that of the overall performance (2011 – 2020) with four indicators (nutrition, child mortality, years of schooling, school attendance) all experienced a rise in deprivations averaging about 47%, whereas (cooking fuel, sanitation, housing, drinking water, electricity and assets) experienced significant reduction in deprivations in these indicators averaging about 50%. In absolute terms, the headcount poverty rather increased by 1.40%, but the intensity of deprivation dropped marginally by 0.1%. From 2014 – 2018 all the indicators projected a drop except child mortality which increased marginally by 0.30% in absolute terms.

The average drop in deprivations was about 3% in absolute terms. In relative terms, electricity enjoyed the highest drop of 29.7% followed by school attendance 20.6%, asset 19.2%, housing 17.9%, years of schooling 16.1%, sanitation 15.6% and drinking water 14.6% in that order. Nutrition contributed the least of 1.6% drop in poverty. The MPI for the period also dropped by 13.85% in relative terms with a relative drop in headcount poverty by 13%. 2011 – 2014 saw a drop in deprivations in all the indicators except school attendance which saw a rise of 1.5% in absolute terms. Electricity experienced the highest drop in deprivation by 8.1% and child mortality experienced the least of 1.8%. In relative terms, the highest drop of 36.7% was experienced for child mortality and the lowest by 11.1% for cooking fuel. The MPI value, headcount poverty, and intensity of deprivation relatively decreased by 15%. 10.6%, and 4.6% respectively.
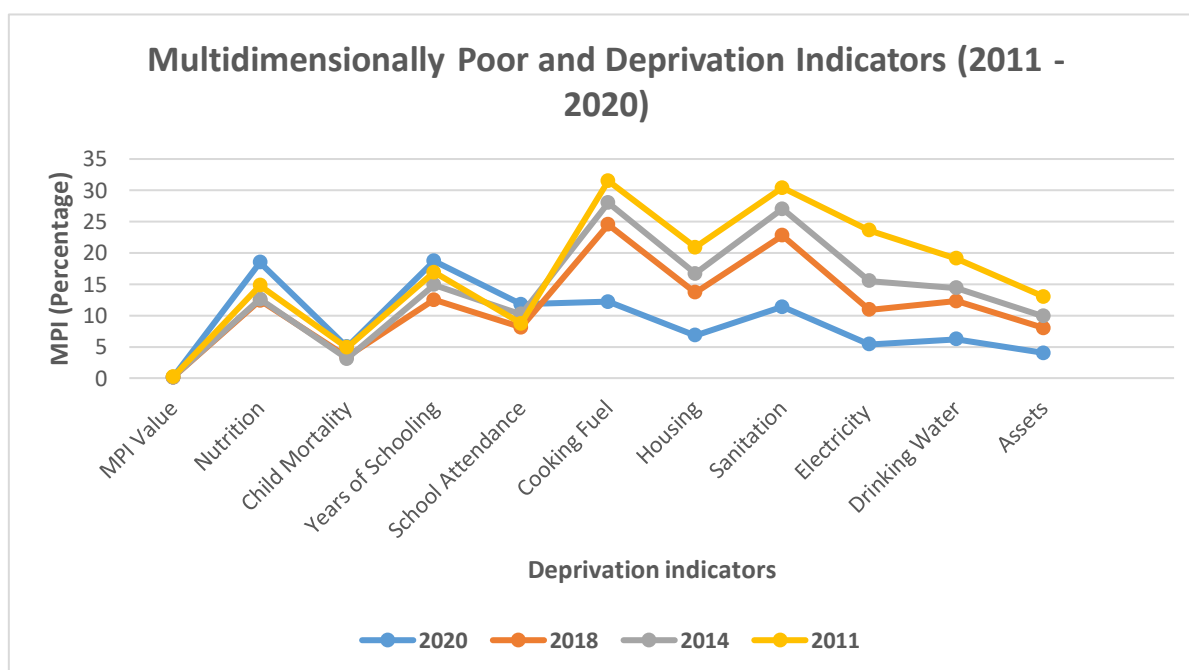

Figure 1. Multidimensional Poverty and Deprivation by Each Indicator

Source: Authors construct

Table 1. Multidimensional Poverty and Deprivation in Each Indicator

Multidimensional Poverty and Deprivation in Each Indicator	2020	2018	2014	2011	abs. chg 2020 - 2018	rel. chg 2020 - 2018	abs. chg 2018 - 2014	rel. chg 2018 - 2014	abs. chg 2014 - 2011	rel.chg 2014 -2011	abs.chg 2020 - 2011	rel. chg 2020 - 2011
	%	%	%	%	%	%	%	%	%	%	%	%
MPI Value	0.111	0.112	0.130	0.153	0.00	-0.89	-0.02	-13.85	-0.02	-15.03	-0.04	-27.45
Nutrition	18.5	12.4	12.6	14.8	6.10	49.19	-0.20	-1.59	-2.20	-14.86	3.70	25.00
Child Mortality	5.0	3.4	3.1	4.9	1.60	47.06	0.30	9.68	-1.80	-36.73	0.10	2.04
Years of Schooling	18.7	12.5	14.9	16.9	6.20	49.60	-2.40	-16.11	-2.00	-11.83	1.80	10.65
School Attendance	11.8	8.1	10.2	8.7	3.70	45.68	-2.10	-20.59	1.50	17.24	3.10	35.63
Cooking Fuel	12.2	24.5	28.0	31.5	-12.30	-50.20	-3.50	-12.50	-3.50	-11.11	-19.30	-61.27
Housing	6.8	13.7	16.7	20.9	-6.90	-50.36	-3.00	-17.96	-3.40	-16.27	-14.10	-67.46
Sanitation	11.4	22.8	27.0	30.4	-11.40	-50.00	-4.20	-15.56	-3.40	-11.18	-19.00	-62.50
Electricity	5.4	10.9	15.5	23.6	-5.50	-50.46	-4.60	-29.68	-8.10	-34.32	-18.20	-77.12
Drinking Water	6.2	12.3	14.4	19.1	-6.10	-49.59	-2.10	-14.58	-4.70	-24.61	-12.90	-67.54
Assets	4.0	8.0	9.9	13.0	-4.00	-50.00	-1.90	-19.19	-3.10	-23.85	-9.00	-69.23
Poverty Headcount (H)	26.1	24.7	28.4	31.8	1.40	5.67	-3.70	-13.03	-3.40	-10.69	-5.70	-17.92
Intensity of Poverty (A)	45.1	45.2	45.7	47.9	-0.10	-0.22	-0.50	-0.22	-2.20	-4.59	-2.80	-5.85

Source: Author's construct

Table 2 and Figure 2 illustrate comparative analysis of performance of Ghana as against Sub-Saharan Africa (SSA) in terms of achievements in multidimensional poverty indicators. The overall MPI value dropped by 0.03% for Ghana in absolute terms and 19.6% in relative terms. For SSA the decrease was 0.01% in absolute terms and 4.4% in relative terms. Ghana performed better both in absolute and relative terms in reducing multidimensional poverty. The number of people in multidimensional poverty represented by headcount ratio dropped by 5.5% in absolute terms and 18.3% in relative terms for Ghana and 1.6% and 2.9% in absolute and relative terms respectively for SSA. Ghana therefore was able to reduce the headcount ratio by 3.9% and 15.4% in absolute and relative terms respectively over SSA. Ghana reduced its intensity of deprivation by 0.7% and SSA by 0.8% in relative terms. Ghana performed worse by 0.1% than the SSA region in absolute terms but better by 0.6% in relative terms. The SSA did not experience any change in inequality among the poor, but Ghana reduced the inequality in relative terms by 12.5%. Ghana and SSA reduced the number of people in severe multidimensional poverty by the same margin (2%) but in relative terms Ghana did better by reducing severe poverty by 13.2% than SSA region.

The population vulnerable in multidimensional poverty dropped 1.9% in absolute terms and 8.6% in relative terms for Ghana, whereas for SSA the drop was 0.8% in absolute terms and 4.5% in relative terms. Ghana performed better by 2.7% in absolute terms and 13.1% in relative terms.

Ghana rather increased the multidimensional poverty in health and education in absolute terms by 1.3% for health and 0.1% in education and 5.8% for health and 0.3% for education in relative terms. The SSA however decreased multidimensional poverty in health by 0.5% in absolute terms but increased the multidimensional poverty in education by 0.2% in absolute terms. Relatively multidimensional poverty in health dropped by 2.2% and increased in education by 0.7% for SSA. Ghana performed poorly in health but better in education than SSA region in both absolute and relative terms. The standard of living for Ghana improved by 1.3% in absolute terms and 2.7% in relative terms. The standard of living for SSA region rather worsened by 0.2% in absolute terms and 0.4% in relative terms.

The study further considered the proportion of the population living under the national poverty line and international poverty line of $1.90 per day. The findings were that Ghana did not experience any change in national poverty line but rather reduced the proportion of the poor under the international poverty line of $1.90 per day by 0.6%. The SSA rather reduced the proportion of the poor under national poverty line by 2.3% in absolute terms and 5.3% in relative terms. For international poverty line ($1.90) SSA dropped by 4.6% in absolute terms and 10.1% in relative terms. Ghana therefore performed badly in both national and international poverty lines as against SSA in both absolute and relative terms.

Table 2. Comparative Performance of Ghana and SSA in MPI Indicators

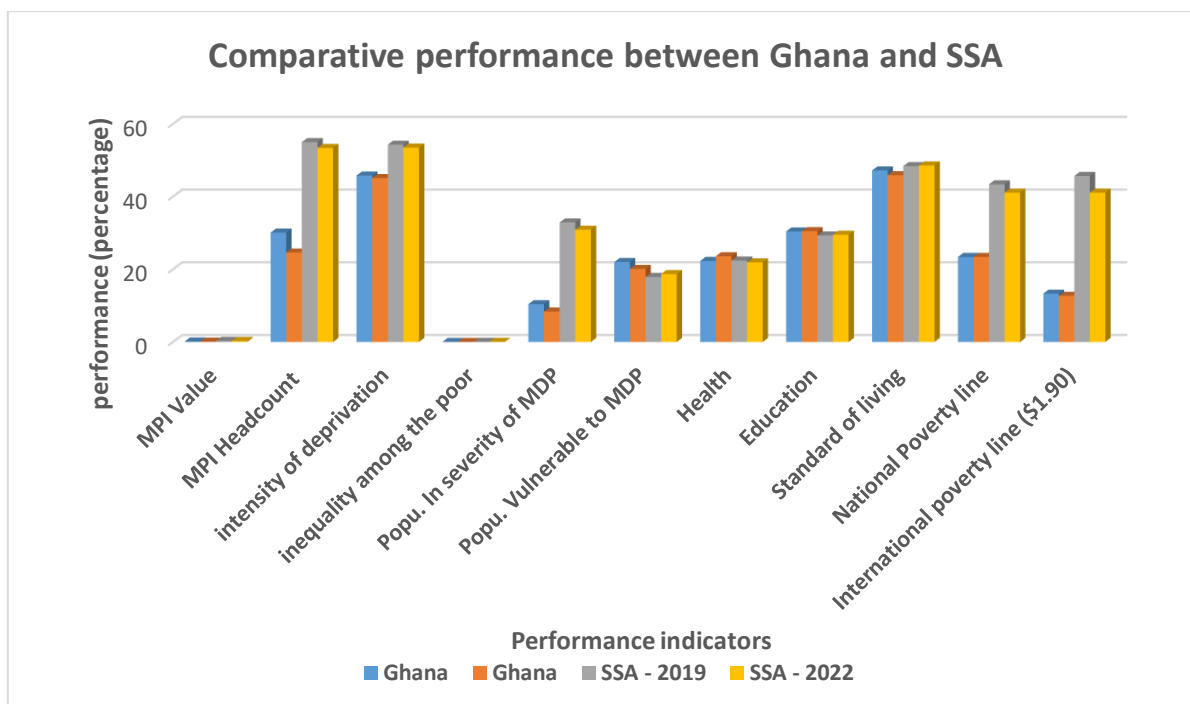| Multidimensional Poverty Index										
Data source (UNDP database)	Ghana-2019	Ghana-2020	SSA - 2019	SSA - 2022	abs. chg	rel.chg	abs. chg -SSA	rel. chg-SSA	abs. chg (GH-SSA)	rel. chg (GH-SSA)
	%	%	%	%	%	%	%	%	%	%
MPI Value	0.138	0.111	0.299	0.286	-0.03	-19.57	-0.01	-4.35	-0.01	-15.22
Headcount (%)	30.1	24.6	55.0	53.4	-5.50	-18.27	-1.60	-2.91	-3.90	-15.36
intensity of deprivation	45.8	45.1	54.3	53.5	-0.70	-1.53	-0.80	-1.47	0.10	-0.06
inequality among the poor	0.016	0.014	0.022	0.022	0.00	-12.50	0.00	0.00	0.00	-12.50
Popu. In severity of MDP	10.4	8.4	32.9	30.9	-2.00	-19.23	-2.00	-6.08	0.00	-13.15
Popu. Vulnerable to MDP	22.0	20.1	17.9	18.7	-1.90	-8.64	0.80	4.47	-2.70	-13.11
Health	22.3	23.6	22.4	21.9	1.30	5.83	-0.50	-2.23	1.80	8.06
Education	30.4	30.5	29.3	29.5	0.10	0.33	0.20	0.68	-0.10	-0.35
Standard of living	47.2	45.9	48.4	48.6	-1.30	-2.75	0.20	0.41	-1.50	-3.17
National Poverty line	23.4	23.4	43.4	41.1	0.00	0.00	-2.30	-5.30	2.30	5.30
International poverty line ($1.90)	13.3	12.7	45.7	41.1	-0.60	-4.51	-4.60	-10.07	4.00	5.55

Source: Author's construct

Figure 2. Comparative MPI Performance between Ghana and SSA

Source: Author's construct

Table 3 and Figure 3 on Regional MPI indicate that Ghana experienced a significant reduction of multidimensional poverty in all the administrative regions between 2011 and 2017 in both absolute and relative terms. This is consistent with [7, 24, 28, 26, 35]. The largest reduction of 19.3% in absolute terms was observed in Upper East region, followed by Ashanti (14.5%), Upper West (13.9%), Western (11.2%), Brong Ahafo (11.2%), Central (9.3%), Volta (6.8), Eastern (5.3%), Greater-Accra (4.7) and Northern (2.7%) in that order. Ashanti Region experienced the highest relative reduction of 31.8% followed by Upper East (22. 08%), Western (19.05%), Brong Ahafo (18.48%), Upper West (17.51%), Greater Accra (17.28%), Central (16.34%), Eastern (10.75%),

Volta (10.46%), and Northern (3.23%) in that order. Northern Region, being one of the poorest region [35] and [7], has been the worst performer in both relative and absolute terms. This observation agrees with [50] who identify between 1999 and 2006 in India that, greater number of the poorest regions are sluggish in multidimensional poverty reduction. The government of Ghana should therefore strategize and target the poorest regions in the implementation of poverty reduction measures. Five regions (Greater Accra, Volta, Eastern, Northern and Western) performed poorly below the national average of 9.40% in absolute terms. In relative terms four regions (Volta, Eastern, Northern, and Central) performed below the national average of 17.09%.

Table 3. Regional Analysis of MPI

Regional Analysis of MPI %	2011 (%)	2017 (%)	Absolute Change (%)	Relative Change
Greater Accra	27.2	22.5	-4.70	-17.28
Volta	65.0	58.2	-6.80	-10.46
Eastern	49.3	44.0	-5.30	-10.75
Ashanti	45.6	31.1	-14.50	-31.80

BAR	60.6	49.4	-11.20	-18.48
Northern	83.5	80.8	-2.70	-3.23
Upper East	87.4	68.1	-19.30	-22.08
Upper West	79.4	65.5	-13.90	-17.51
Central	56.9	47.6	-9.30	-16.34
Western	58.8	47.6	-11.20	-19.05
National	55.0	45.6	-9.40	-17.09

Source: Author's construct
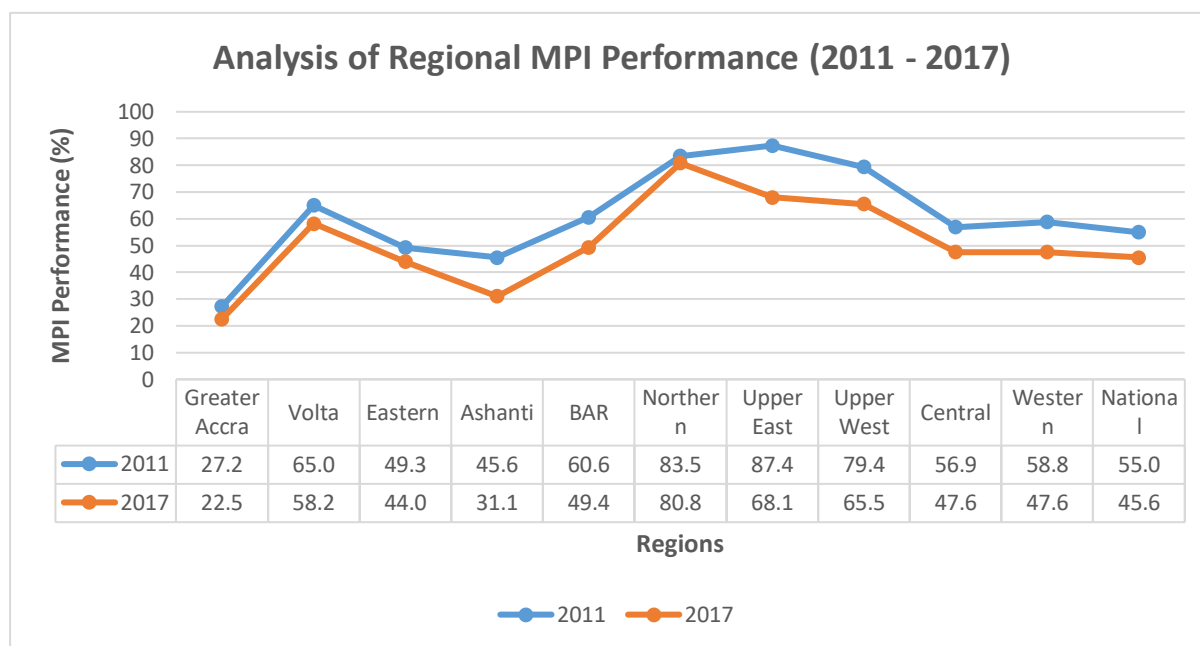
Figure 3. Analysis of Regional MPI Performance (2011–2017)

Source: Author's construct

Table 4 represents poverty cut-offs and their impacts on MPI. The poverty cut-offs of k = 33.33% indicates proportion of the population which are deprived in at least one-third of the indicators. The MPI is measured by poverty headcount (H) and intensity of deprivation (A). Poverty headcount (H) at k = 33.33% dropped by 5.5% in absolute terms and 18.3% in relative terms for Ghana, whereas for SSA poverty headcount decreased by 1.6% in absolute terms and 2.9% in relative terms. Ghana therefore reduced its headcount poverty by 3.9% and 15.36% in absolute and relative terms respectively as compared to achievements for SSA. The intensity of poverty (A) decreased by 0.7% in absolute terms and 1.53% in relative terms for Ghana and 0.8% in absolute terms and 1.47% in relative terms for SSA.

This implies Ghana did poorly in terms of absolute reduction in intensity of deprivation by 0.1% than the SSA but did better in relative terms by 0.06%. The population vulnerable to multidimensional poverty represented by cut-off value of k = (20% - 33.33%) dropped by 1.9% and 8.64% respectively for absolute and relative terms for Ghana and 0.8% and 4.47% in absolute and relative terms respectively for SSA. The achievement for Ghana was better than SSA by 2.7% in absolute terms and 13.11% in relative terms. Population in severe multidimensional poverty represented by cut-off value of k = / > 50% reduced by 2% just the same as that for SSA in absolute terms. In terms of relativity Ghana dropped by 19.3% whereas SSA dropped by 6.08% indicating a favorable variance of 13.15% for Ghana.

Table 4. Poverty Cut-offs and Impact on MP1

Incidence, Intensity, Vulnerability and Multidimensional Poverty Index (MPI)

Data Source	Index	Ghana 2014-DHS Value	Ghana 2017/18 - MICS Value	SSA Value	SSA Value	Abs.chg	Rel.chg	Abs. chg SSA	Rel. change SSA	Abs. change GHA-SSA	Rel. change GH-SSA
Poverty cut-off (k)	MPI	0.138	0.111	0.315	0.286	-0.03	-19.57	-0.03	-9.21	0.00	-10.36
	Headcount (%) (H)	30.10	24.60	55.00	53.40	-5.50	-18.27	-1.60	-2.91	-3.90	-15.36
k-value = 33.33%	intensity of deprivation (A)	45.80	45.10	54.30	53.50	-0.70	-1.53	-0.80	-1.47	0.10	-0.06
k-value = 20% - 33.33%	Population vulnerable to multidimensional poverty	22.00	20.10	17.90	18.70	-1.90	-8.64	0.80	4.47	-2.70	-13.11
k-value = /> 50%	Population in severe multidimensional poverty	10.40	8.40	32.90	30.90	-2.00	-19.23	-2.00	-6.08	0.00	-13.15

Source: Author's construct

Conclusion and Policy Implications

The overall aim of the study is to ascertain trends in reduction of multidimensional poverty in Ghana from 2011 to 2020 adopting Alkire and Foster method. The period of analysis was chosen because it falls within the period a comprehensive cross-sectional data on multidimensional data was first collected via a multiple indicator cluster survey in 2011. The study observed a general fall in multidimensional poverty over the period at both national and regional levels. This is consistent with the findings of [1, 7, 24, 26, 28, 30, 31, 33, 34, 35, 37, 50, 68, 69, 70] that developing countries have experienced downward trends in multidimensional poverty over the years. As a lower-middle income country, Ghana must put in much effort to alleviate poverty further irrespective of its nature across all the population groups by 2030 in line with Sustainable Development Goal 1 [26, 28, 32]. The decrease in poverty has not been even both in absolute and relative terms. The worst performance was experienced in the Northern Region which is the poorest of all the regions. Deliberate and conscious effort in investments targeting at poverty reduction should be instituted to reduce poverty in these areas [49].

Investments in agriculture and rural infrastructure and social services such as education and health are key in reducing multidimensional poverty as more than 80% of the people in the savannah regions engage in agriculture [7, 35]. Ghana performed massively well in the indicators within the standard of living dimension namely, cooking fuel, electricity, housing, drinking water, sanitation, and assets, perhaps because of general improvement of the per capita income of the people and fall in income poverty over the years. However, Ghana failed to reduce multidimensional poverty in education and health indicators.

There is the need to consciously invest heavily in education and health in order to cause a decline in multidimensional poverty. Investments in primary health care, health insurance, access to health facilities, expansion of school feeding programme, free senior high school, opening of more schools will improve access to education and health which will subsequently improve the well-being of the people, and hence their capacity to lift themselves out of poverty. Government must concentrate more on rural development as majority of the poor reside in rural areas and are employed in the agriculture sector [7, 26, 30, 31, 33, 35, 71] Comparison with the performance of the SSA region shows that Ghana outperformed the average performance of the sub-region in almost all the indicators and decreased its multidimensional poverty more than its counterparts in the sub-region. Government should sustain this feat and improve upon it to eliminate poverty in all its forms by 2030.

Conflict of Interest

I Ofori Frimpong Henneh, the researcher do hereby declare that I do not have any interest whatsoever in relation to the publication of this research work.

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