

Unmasking the factors behind income inequalities in Ghana

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Abstract

Purpose – The purpose of the paper is to examine the extent and trends of income inequality as well as the contribution of household and community-level factors in explaining inequality within north and south in Ghana.

Design/methodology/approach – The study employs both descriptive and regression methods. The study adopts the methodology by Fields (2002) to assess the importance of household and community attributes in explaining the level of inequality within the north and the south.

Findings – The findings of the study show that household characteristics such as urban location, no education, public and private formal economic activities, and not covered by National Health Insurance Scheme are major determinants of inequality within the north and the south. Specifically, within the north, the 20-34 year age group is the most prominent contributor to inequality. Within the south, the most important determinant of inequality is the completion of junior high school. The contribution of community-level features shows that, within the north, access to banks is the most vital factor to inequality, whereas within the south, access to electricity and public transport is the most important community factor.

Practical implications – The study provides an understanding of the underlying household and community factors driving the observed inequality patterns within the north and the south in Ghana. Policy options are identified for achieving the sustainable development goals.

Originality/value – The study uses the latest round of the Ghana Living Standards survey, GLSS 6, which covers new data on a nationally representative sample of 18,000 households in 1,200 enumeration areas.

Keywords Ghana, Income inequality, Policy options, Sustainable development goals

Paper type Research paper

1. Introduction

Inequality – which is generally defined as the proportion of, and gaps between, the rich and the poor – can exist and contribute to poverty in a range of dimensions, and is often measured in monetary terms (income). Inequality also has nonmonetary dimension (non-income) such as health, nutrition, education, and access to basic services. Inequality was one of the central topics of the World Summit for Social Development in 1995. Resolution 62/213 of March 7, 2008, of the UN General Assembly recognized that inequality within and among countries is a concern for all countries regardless of their levels of development. It represents a growing challenge with multiple implications for the realization of economic and social potentials and the achievement of internationally agreed goals including the sustainable development goals. Recently, the World Bank adopted two new metrics for fighting global poverty and inequality. Specifically, this goal is to be reached by ending extreme levels of poverty and promoting what the bank termed “shared prosperity.” Ending extreme poverty has been defined as reducing “the percentage of people living with less than \$1.25 a day to no more than 3 percent globally by 2030.” In contrast, promoting shared prosperity is defined as “fostering income growth of the bottom 40 percent of the population in every country” (World Bank, 2013).

The UN report (doc. A/67/394) points out that inequality has been growing in many countries throughout the world despite the decline in absolute poverty. Poverty and inequality are more pronounced in Sub-Saharan Africa (SSA). Evidence suggests that SSA is the second



most inequitable region after Latin America (African Development Bank, 2012). Again, more than one-third of countries in SSA, several of them fragile and conflict-affected states, had an extreme poverty rate of more than 50 percent in 2010. In 12 countries in SSA, the extreme poverty rate is above 60 percent; in four cases (Burundi, the Democratic Republic of Congo, Liberia, and Madagascar), it is above 80 percent (World Bank, 2013). This is puzzling in a region where six of the ten fastest growing economies in the world are found. Inequality seems to be on the rise on the continent despite the general decline in absolute poverty. The average Gini coefficient is 47.4 for SSA, and the poorest 20 percent of the population earn only 5.3 percent of total income (Anderson and McKay, 2004). Non-income inequality in access to education, health, public services, and the labor market is also high across SSA, particularly between geographical settings such as regions, rural-urban, and men-women (Okojie and Shimeles, 2006).

Inequality characteristics within Ghana exhibit similar trends to those within the continent. In Ghana, current estimates from the GLSS 6 show that the overall poverty rate has declined substantially over the past two decades from 51.7 percent in 1991/1992 to 24.2 percent in 2012/2013. Similarly, the proportion of the population living below the extreme poverty line has declined from 36.5 percent to 8.4 percent over the same period. However, despite the significant progress in combating poverty at the national level, there have been some manifestations of increased inequalities. The inequality measure, using the Gini coefficient, for instance, continued to increase from 41.9 percent in 2005/2006 to 42.3 percent in 2012/2013 (Ghana Statistical Service (GSS), 2014). Specifically, inequality between and within localities, regions, occupations, and gender is more pronounced. The increasing inequality over the period is evident in both rural and urban localities overall, increasing for rural areas from 37.8 percent in 2005/2006 to 40.0 percent in 2012/13, and in urban areas from 38.3 percent to 38.8 percent. All the rural areas experienced increasing inequality between 2005/2006 and 2012/2013 periods, with the rural coastal showing the largest increase. The worsening inequality in the rural coastal localities is largely attributed to worsening levels of inequality in the Volta region of Ghana, which increased from 35.4 percent to 41.2 percent. The poor state of rural infrastructure, rural livelihoods, youth unemployment, limited access to quality education, and high child labor are all key drivers of rural poverty and, by extension, the drivers of inequalities in Ghana (United Nations, 2012).

In Ghana, disparities in social and economic well-being are also evident between various spatial units across the country, particularly southern Ghana and northern Ghana (Aryeetey *et al.*, 2009). Regional inequality in Ghana has been persistent, particularly between the north and the south over the years. Regions in the south are far better off than the three northern regions. For instance, in 2005/2006 and 2012/2013, the north had a proportion of 52.5 percent and 43.7 percent, respectively, in the lowest income quintile, whereas the south had only 7.6 percent and 11.3 percent, respectively, in the same income quintile. Inequality is highest in the Upper West/East and Northern regions and has increased in these regions over the period from 2005/2006 to 2012/2013. The prevailing regional inequalities raise policy issues regarding how to manage the disparities in resources and living standards within and across the north and south in Ghana.

Regional inequalities in Ghana are largely attributed to the structure of the Ghanaian economy, which has changed very little from that inherited from the colonial era. The continuation in the post-colonial era of the colonial policy of investing in regions with exportable products and providing supporting infrastructure in such regions has resulted in between-regional inequalities among regions in Ghana. Past development efforts at achieving a more equitable distribution of resources and investments have not been successful enough in addressing development imbalances, especially due to non-implementation and internal planning weaknesses. The fundamental reason for non-implementation is that the state has attempted to accomplish more than it is able to,

given the limited resources that it is able to command, as well as mismanagement of scarce resources (Aryeetey *et al.*, 2009). From the late 1980s through the 1990s, extension of the electricity grid to the north, the establishment of the University for Development Studies (with campuses spread throughout the three northern regions), rehabilitation and development of physical and social infrastructure, and considerable project aid from official donor agencies and international NGOs have been implemented. However, the impacts of these efforts are limited because there has not been a concerted strategy and policy to create regional balance in Ghana's development (Shepherd *et al.*, 2005).

Though inter-regional differences contribute somewhat to total income inequality in Ghana, the size of this contribution is small compared with that of within-region inequalities (Annim *et al.*, 2012). Aryeetey *et al.* (2009) found that while inequalities exist between the north and the south, they are more significant within the north and the south. The majority of the studies on inequalities in Ghana attempts to analyze the extent and trends of inequalities between regions (see McKay and Aryeetey, 2007; Coulombe and Wodon, 2007; Aryeetey *et al.*, 2009), and in some cases the contribution of household characteristics to income inequality within the country as a whole (Canagarajah *et al.*, 1998; Annim *et al.*, 2012). These studies have also used the GLSS 1-5 survey data. Given the importance of within-region inequality and development policy targeting, this study draws on the recent household survey data in Ghana, GLSS 6, to examine the extent and trends of inequality as well as the contribution of household- and community-level factors in explaining inequality within the north and within the south. In this way, the study contributes to the literature on inequalities in Ghana by providing an understanding of the underlying household and community factors driving the observed inequality patterns within the north and the south in order to identify key policy options for inclusive growth and shared prosperity.

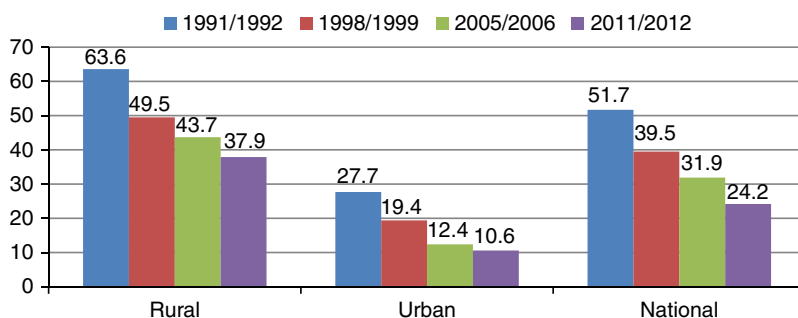
The remainder of the paper is organized as follows: In Section 2, we present an overview of levels and trends of poverty in Ghana. We discuss the methodology and data used for the study in Section 3. Analysis of extent and trends of income inequality and the determinants of inequality within the north and within the south are presented in Sections 4 and 5, respectively. We conclude in Section 6.

2. Overview of levels and trends of poverty in Ghana

Overall, the poverty profile of Ghana shows declining levels of poverty across the country, with the lowering of the share of the population living in poverty from 51.7 percent in 1991 to 39.5 percent in 1998. Based on the new poverty line for 2012/2013, the adjusted or revised welfare levels for 2005/2006 indicate that overall poverty incidence for 2005/2006 was 31.9 percent, whereas the proportion of the population defined as poor is 24.2 percent in 2012/2013. This shows that about 6.4 million people in Ghana are poor (see Figure 1). The incidence of poverty is therefore reduced by 7.7 percentage points over the seven-year period (GSS, 2014).

Further breakdown on declining levels of poverty suggests significant differences across localities (rural and urban areas), administrative regions, economic activity, and gender (male- and female-headed houses). Considering the upper poverty line of GH¢1,314, the headcount poverty declined from 12.4 percent in 2005/2006 to 10.6 percent in 2012/2013 for urban dwellers, and from 43.7 percent in 2005/2006 to 37.9 percent in 2012/2013 for rural dwellers. The incidence of poverty for the rural areas has however remained higher than that for the national over the years (see Figure 1). For instance, in 2012/2013, the rural population comprised 50 percent of the population of Ghana, yet it accounted for 78 percent of those in poverty. This is in line with previous poverty profile reports (GSS 1998/1999 and 2005/2006) where above 80 percent of the total population living below the poverty line in Ghana was living in the rural areas (GSS, 2014).

Among rural localities where poverty is prominent, the poverty incidence has been much higher among those living in rural savannah over the last two decades. In 2012/2013,



Source: Authors (using GLSS data)

Figure 1.
Trends in poverty
incidence in Ghana
(1991/1992-2012/2013)

the contribution to poverty incidence in rural savannah is found to be higher than in rural coastal and forest combined. Notably, rural savannah contributes more than 40 percent to the overall poverty in Ghana. In contrast, Greater Accra (GAMA) recorded the lowest poverty incidence of 3.5 percent among all the geographical areas in 2012/13. This phenomenon confirms previous poverty reports which indicate that the poverty decline in Ghana (from 1998/1999 to 2012/2013) has not been evenly distributed geographically (GSS, 2014, p. 10).

With regards to the incidence of poverty, the experiences of most regions are mixed. There is a lot of variability in poverty incidence by region. Although half of the ten regions (Greater Accra, Western, Central, Eastern and Ashanti) had their rates of poverty incidence lower than the national average of 24.2 percent, the remaining regions had rates higher than the national average; Greater Accra is the least poor region and the Upper West the poorest overall. Though most regions show a reduction in poverty incidence since 2005/2006, the pattern of poverty by region has not changed. Recent GLSS 6 report shows that amongst the ten administrative regions, the incidence of poverty and poverty gap are not evenly distributed. Greater Accra has a very low level (5.6 percent) of poverty incidence, which is 18.6 percentage points lower than the national rate of poverty. The same cannot be said of the three northern regions, which comprise mainly savannah areas. More than four in every ten persons are poor in Upper East (44.4 percent), increasing to one in every two in the Northern region (50.4 percent) and seven out of every ten in Upper West (70.7 percent). Among the three northern regions of Ghana, there are very wide differences between their rates of poverty incidence, irrespective of the closeness of the regions and whether the regions concerned share boundaries (see GSS, 2014). Consistent with the poverty estimates in 2005/2006, the Northern region with a poverty incidence of 50.4 percent accounts for one-fifth (20.8 percent) or 1.3 million of the poor in Ghana, making this region the highest single contributor to the level of poverty in Ghana in 2012/2013.

Following from the same pattern found in 1991/1992, poverty incidence among male-headed households is higher (25.9 percent) than female-headed households (19.1 percent) in 2012/2013 period. Although both sexes have seen a decline in poverty over the period, the rate is three times greater for male-headed households. In both rural and urban areas, the incidence of poverty for female-headed households is lower compared to male-headed household.

In the latest round of the GLSS, the relationship between poverty rates and economic activities in which households are engaged shows that the poverty incidence is highest among households where the head is engaged as self-employed in the agricultural sector. Households whose heads are paid employees, self-employed in the non-agricultural sector, or retired are less likely to be poor. Even though farmers experienced some reduction in poverty over the 2005/06-2012/13 period, they are still the poorest. Households whose

heads are engaged as self-employed in the non-agricultural sector (12.8 percent), private sector employees (10.8 percent), and public sector employees (7.1 percent) record lower than national average poverty rates. With the exception of the unemployed where poverty worsened, all other categories of economic activities experienced an improvement since 2005/2006, with a drastic reduction of about 15 percentage points among the economically not active persons (GSS, 2014, p. 19).

Considering the educational level of household head, poverty is higher among households whose heads are uneducated than among those with some education. There is a clear trend that suggests that the level of poverty reduces as the educational level of the household head increases. More than one-third of household heads with no education are poor compared with 15.7 percent of those with a BECE and 8 percent of those with a secondary education. Only 3 percent of heads with a tertiary education are poor. The contribution to national poverty incidence by households headed by an uneducated person is 72.4 percent, whereas the highly educated accounts for less than 1 percent (GSS, 2014, p. 20).

Extreme poverty on the other hand has been falling consistently over the years. Given the extreme poverty line of GH¢792.05 per adult equivalent per year in 2012/2013, an estimated 8.4 percent of Ghanaians are considered to be extremely poor. The revised extreme poverty line based on the current basket of food consumed by Ghanaians in 2005/2006 indicates that the incidence of extreme poverty reduced by 8.1 percentage points from the 2005/2006 revised extreme poverty incidence of 16.5 percent. Although the absolute number living in extreme poverty has reduced over time, it is still quite high given the fact that Ghana is considered to be a lower middle-income country (GSS, 2014). Estimates of extreme poverty are far lower in the urban areas (1.9 percent) compared to the rural areas (15 percent). Extreme poverty in the rural areas is about twice that of the national average of 8.4 percent for the 2012-2013 period (see Figure 2). Extreme poverty is therefore a rural phenomenon, with as many as over 1.8 million persons living in extreme poverty in rural areas based on 2010 PHC projections (GSS, 2014, p. 12).

The sharp geographic variations that characterize absolute poverty are found to be more pronounced with extreme poverty, with the incidence of extreme poverty being highest in rural savannah. Extreme poverty is particularly high in rural savannah at 27.3 percent, and this locality accounts for nearly three-fifths of those living in extreme poverty in Ghana. The incidence of extreme poverty is virtually non-existence in urban localities, with Accra (GAMA) contributing only 0.9 percent to the incidence of extreme poverty. Urban localities contribute 11.2 percent to the national incidence of extreme poverty (GSS, 2014, p. 12).

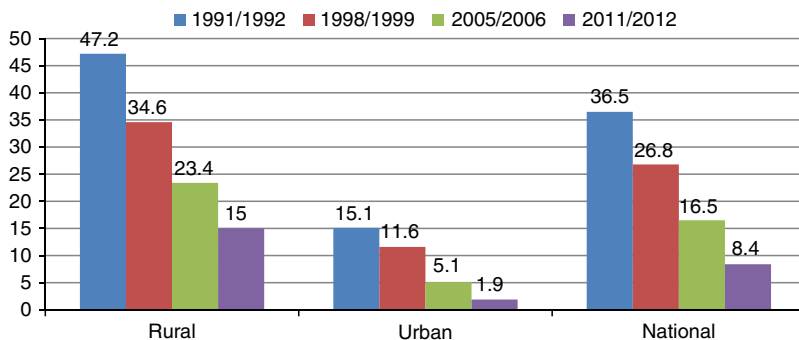


Figure 2.
Trends in extreme poverty incidence in Ghana (1991/1992-2012/2013)

Source: Authors (using GLSS data)

The current estimates indicate that, apart from the three northern regions and the Volta region whose rates are higher than the national rate of extreme poverty, all the other regions in the coastal and forest areas have rates lower than the national average. Upper West region has the highest extreme poverty incidence of 45.1 percent, followed by Northern (22.8 percent) and Upper East (21.3 percent). The Northern region accounts for slightly over a quarter of the extreme poor in Ghana, far more than any other region (see Figure 3). The three northern regions combined account for more than half of those living in extreme poverty (52.7 percent). The pattern is consistent over the years, although the three northern regions account for slightly less of the extreme poor in 2012/13 (GSS, 2014).

3. Methodological approach and sources of data

The study relies on both consumption and income data as a measure of welfare in order to understand the extent and trends of inequality and to explore deeply into the relevant sources of inequality within the north and the south. The study employs both descriptive and regression methods. The descriptive analysis is used for the decomposition of inequality, while the regression approach is also employed to explain the determinants of inequality within the north and within the south in Ghana.

Several income inequality measures have been put forward in the literature to characterize the distribution of living standards (Sen, 1973; Theil, 1979; Kakwani, 1980; Fields, 1980; Shorrocks, 1984; Glewwe, 1986; Litchfield, 1999). According to these authors, any appropriate measure of inequality that can conveniently facilitate welfare analysis must lend itself to at least five axiomatic conditions: the mean independence condition, the population-size independence condition, the Pigou-Dalton transfer sensitivity, the symmetry condition and the de-composability condition.

The Gini index is very popular and attractive among researchers and practitioners in measuring income inequality. However, the Gini index tends to satisfy axioms 1-4 above but fails the de-composability condition. The Gini index and general entropy inequality measure (Theil's index) are used to measure income inequality. The Theil's measure has an advantage over the Gini coefficient in that, it is additively decomposable. It is additively decomposable between (T_b) and within groups (T_w) as expressed in Equation (1) as follows:

$$T = \frac{1}{n} \sum \frac{y_i}{y} \ln \left(\frac{y_i}{y} \right) = T_w + T_b = \sum_j s_j^* \ln \left(\frac{n}{n_j s_j^*} \right) + \sum_j s_j^* \sum_i s_i^j \ln (n_j s_i^j) \quad (1)$$

where y_i = income for the i th individual, s_j^j = share of the total income enjoyed by the j th group (that is, $s_j = y_j/n\bar{y}$), s_i^j = share of the total income in j th group enjoyed by the i th individual; n = total population and n_j = the number of individuals in the j th group (see Wodon and Yitzhaki, 2002, for a detailed methodological explanation of inequality

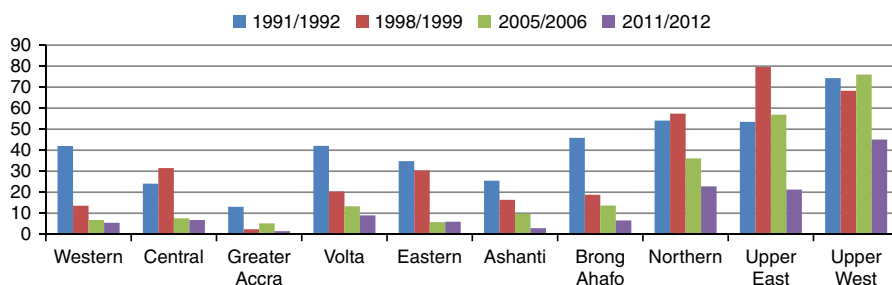


Figure 3.
Trends in extreme
poverty incidence in
Ghana by region
(1991/1992-2012/2013)

Source: Authors (using GLSS data)

measures and their decompositions). The Distributive Analysis Stata Package (DASP version 2.3; Araar and Duclos, 2013) is used to compute Gini and Theil's index of inequality for 2012/2013.

As indicated earlier, the regression approach is used to analyze the determinants of inequality within the north and within the south in Ghana. The study adopts the methodology by Fields (2002) to account for inequality. The regression approach allows one to assess the importance of household and community attributes in explaining the level of inequality, where the relative contribution by each factor is independent of the inequality measures used. Specifically, let us assume that logarithm of expenditure per adult equivalent for the i th household ($\ln y_i$) is influenced by household- and community-level characteristics (z_i), then:

$$\ln y_i = \sum_{j=0} \beta_j z_{ij} + \varepsilon_i \quad (2)$$

The error term (ε) is assumed to be normally distributed with mean zero and constant variance:

$$\frac{\sum_j \text{cov}(\beta_j z_{ij}, \ln y_i)}{\sigma^2(\ln y)} \equiv \sum_j S_j \equiv 100 \quad (3)$$

where:

$$S_j = \frac{\text{cov}(\beta_j z_{ij}, \ln y_i)}{\sigma^2(\ln y)} \quad (4)$$

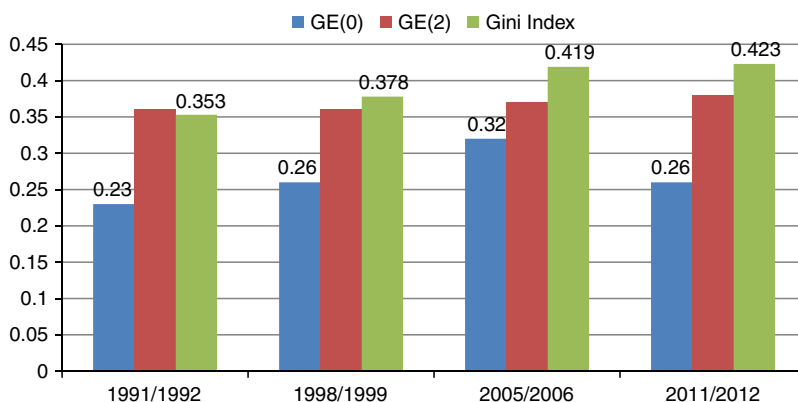
Equations (3) and (4) suggest that the percentage of variance in expenditure per equivalent adult can be explained by its covariance with each of independent variables (z_i) and its parameter.

Data

The main source of data for the study is the latest round of the Ghana Living Standards Survey, GLSS 6, conducted in 2012/2013 by the Ghana Statistical Service. The GLSS 6 covered a nationally representative sample of 18,000 households in 1,200 enumeration areas. Of the 18,000 households, 16,772 were successfully enumerated leading to a response rate of 93.2 percent. The GLSS is a multi-purpose household survey which collects detailed information on the demographic characteristics of households, education, health, employment, migration and tourism, household agriculture, household expenditure, income and their components among others. Rounds 1-5 of the GLSS are also used.

4. Extent and trends of inequality in Ghana (1991/1992 to 2012/2013)

In this section, we use the entropy class measures in addition to the Gini Index to analyze equality using consumption expenditure data over the GLSS 3, 4, 5 and 6 survey periods. The analysis shows that by any measure of inequality, welfare distribution was at best in 1991/1992, when the Gini index was 0.353. After 1991/1992, welfare gaps widened progressively as reflected in the rise of the adjusted Gini index (based on December 2012 poverty line) to 0.419 in 2005/2006. In 2012/2013, the Gini index increased marginally to 0.423, representing a 12.8 percent increase over the 1991/1992 to 2012/2013 period (see Figure 4). The increase implies that over time Ghanaians are not benefiting evenly from the growth process. If inequality had reduced over the period, poverty rates would have reduced further since the welfare levels of many more Ghanaians would have improved.



Sources: Coulombe and Wodon (2007) and Authors' own calculations using GLSS 6

Figure 4.
Trends in Gini Index
and decomposition by
income distribution in
Ghana (1991/1992 to
2012/2013)

The entropy class of measures gives a more complete picture about what happened to each part of the income distribution (see Figure 4). Over the past two decades, GE(2), which captures the contribution of inequality at the upper (richer) end of the income distribution, has been very high compared to GE(0), which depicts changes at the lower end of the income distribution. GE(2) reports the highest percentage change of 48.7 percent over the 1991/1992 to 2012/2013 period. This depicts that the worsening of inequality mainly comes from the upper end of income distribution. Changes in GE(0) were 19.4 percent for the 1991/1992-2012/2013 periods. Even though, moderate increases in inequality also occurred at the lower end of income distribution over the GLSS 3-6 period, inequality at the lower end of the income distribution decreased between 2005/2006 and 2012/2013 (see Figure 4). This may be attributed to the effects of pro-poor policies implemented over the period.

The Gini index for consumption per equivalent adult indicates that inequality in both urban and rural areas has experienced an increase over the 1991/1992 to 2012/2013 period. In 1991/1992, the Gini index for the rural population was 0.329 compared to 0.321 for urban, whereas in 2005/2006, the adjusted Gini index for rural and urban areas increased to 0.378 and 0.382, respectively. In 2012/2013, the Gini index increased to 0.40 for rural areas and 0.388 for urban areas. The decomposition of inequality using the entropy measure shows that the contribution to inequality at the lower and upper end of the distribution has increased (albeit pronounced at the upper end) in both the rural and urban areas. Clearly, both the poor and non-poor are found hurting from the worsening inequalities.

Some localities in the urban areas, namely, Accra and urban savannah experienced a decline in inequality over the 1991-1998 period. The urban forest and rural savannah also showed slight decreases in inequality over the 1998-2005 period. In the 2005/2006-2012/2013 period, all the rural areas experienced increasing inequality between the two periods, with the rural coastal showing the largest increase. The worsening inequality in the rural coastal localities is largely due to worsening levels of inequality in the Volta region of Ghana which increased from 35.4 percent to 41.2 percent (GSS, 2014, p. 21). Accra (GAMA) and urban coastal areas experienced improving equality over the 2005/2006-2012/2013 period, with Accra (GAMA) showing the largest decline from 41.5 percent in 2005/2006 to 36.8 percent in 2012/2013 (GSS, 2014).

Regionally, the Northern region had the highest index of inequality in 1991/1992 (0.3993) and 1998/1999 (0.3884) survey periods. Upper West region reported the highest (adjusted) Gini index in 2005/2006 (0.426) and 2012/2013 (0.485). The Eastern region was the only region that recorded a decline in inequality over the GLSS 3-5 survey period. Inequality has

increased in both Northern and Upper West regions over the period from 2005/2006 to 2012/2013. Improvements in inequality rates are evident in Greater Accra (reducing from 41.9 percent in 2005/2006 to 37.0 percent in 2012/2013) and in the Central region (from 40.1 percent to 38.1 percent). A small decline is also evident in the Ashanti region. Generally, although some regions benefited from fair distribution of welfare over the period (2005/2006 to 2012/2013), others did not, indicating that the remarkable economic growth rate recorded in Ghana over the seven-year period benefited some regions more than others (GSS, 2014).

5. Determinants of inequality within the south and within the north in Ghana

In this section, we employ an alternative decomposition approach by Fields (2002) to investigate the dispersion of inequality within the south and the north using household and community-level characteristics. This technique by Fields (2002) allows us to assess the importance of household and community-specific characteristics in explaining the level of inequality within the north and the south, where the amount explained by each factor is independent of the inequality measures used. As discussed in Section 2, the method involves running a standard set of regression in the form specified in Equation (2). The methods in Equation (4) are used to quantify the contributions of various factors in accounting for the levels of inequality.

The dependent variable used for the analysis is expenditure per adult equivalent measured in logs. The explanatory variable groups are gender (two categories), locality (two categories), age (five categories), education (three categories), economic activity (four categories), health insurance (two categories), and community-level characteristics (seven categories). The community-level characteristics comprise group of variables regarding the communities access to public services. We run separate regressions for households and community characteristics (see Tables AI and AII) because the data on households have far more observations than that of the community. The resultant absolute and relative contributions to inequality are presented in Tables I and II, respectively.

Our results show that household factors such as urban locality, 20-34 year age group, no education, public and private formal activities and non-coverage of households by National Health Insurance Scheme (NHIS) are major contributors of inequality within the north and/or within the south.

The urban dummy is a major factor explaining inequality within the north and the south. The relative contribution of the urban dummy to inequality was 41.3 percent for the north and 29 percent for the south. This reveals that the persistent urban-rural gap in welfare outcomes within the south and the north is a key factor accounting for inequality. The urban centers of the north are the equal of the southern counterparts. Within both the south and the north, urban expenditures are higher than that of the rural areas. The rural populations in the north, which makes up 79.1 percent of the total population, are mostly scattered settlement and partly disconnected. This is due to the low productive carrying capacity of the land. In the south, the rural areas are also largely remote. This dispersed and remoteness of the rural population raises the cost of infrastructural investment in roads, schools, and hospitals. There is therefore the lack of, or imperfection of, markets where the number of buyers and sellers is restricted. In addition, the agriculture sector is the main employer of the rural population, but rural women also have high participation in the self-employment activities. Self-employment in rural areas may not be conducive to higher incomes/earnings as it is in the urban south. Households in rural areas where the head is engaged as self-employed in agriculture or in non-farm activities tend to have higher incidence of poverty. Non-farm self-employment does not contribute to reducing poverty in rural areas. The GLSS 6 report shows that although higher proportions of the rural populace have income sources from this income group, they still remain at the lowest income quintile. The poor rural conditions also encouraged migration from the rural to the urban areas, for jobs or education, leaving the rural with lower human development capacity.

	Ghana		North		South	
	Absolute	Relative	Absolute	Relative	Absolute	Relative
Urban dummy	0.164	0.350	0.238	0.413	0.145	0.290
Male dummy	-0.125	-0.267	-0.126	-0.218	-0.126	-0.253
Household size	-0.263	-0.561	-0.283	-0.489	-0.239	-0.478
<i>Age</i>						
20-34 years	0.012	0.025	6.801	11.772	-0.646	-1.294
35-44 years	-0.002	-0.004	-1.708	-2.957	0.565	1.130
45-54 years	-0.002	-0.004	-1.004	-1.739	-0.357	-0.715
55-64 years	0.000		0.000		0.000	
65 plus	-0.004	-0.008	-4.965	-8.594	-0.186	-0.373
<i>Education</i>						
None	-0.001	-0.001	0.253	0.438	0.144	0.289
primary	-0.002	-0.004	0.232	0.401	-0.199	-0.399
JSS/JHS	0.005	0.012	0.217	0.376	0.673	1.347
SSS/SHS	0.000		0.000		0.000	
Tertiary	0.000		0.000		0.000	
<i>Economic activity</i>						
Public	0.018	0.038	0.562	0.972	0.122	0.245
Private Sector Formal	0.005	0.011	0.345	0.597	0.217	0.434
Private Sector Informal	-0.071	-0.152	-0.077	-0.134	0.001	0.002
Agriculture Business	-0.009	-0.019	-0.020	-0.035	0.192	0.383
<i>NHIS</i>						
Not Covered	0.921	1.962	0.194	0.336	0.270	0.541
Covered	-0.178	-0.379	-0.080	-0.138	-0.074	-0.149
Total	0.469	1.000	0.578	1.000	0.500	1.000

Table I.
Absolute and relative
contribution of
household
characteristics to
inequality within the
north and the south
using GLSS 6

	Ghana		North		South	
	Absolute	Relative	Absolute	Relative	Absolute	Relative
Motorable road network all year	-0.019	-0.027	0.736	0.176	0.065	0.609
Access to electricity	0.525	0.732	-0.334	-0.080	0.314	2.937
Access to pipe/bore hole	-0.160	-0.223	-0.993	-0.238	-0.712	-6.665
Access to phone network	0.139	0.194	1.530	0.366	0.153	1.430
Access to bank	0.056	0.079	2.151	0.515	-0.062	-0.577
Availability of a daily market	-0.106	-0.148	1.482	0.355	0.048	0.450
Access to public transport	0.282	0.393	-0.392	-0.094	0.301	2.817
Total	0.717	1.000	4.179	1.000	0.107	1.000

Table II.
Relative and overall
contribution of
community
characteristics to
inequality within the
north and the south
using GLSS 6

Remarkably, in terms of relative contribution to inequality, the 20-34 age group contributes the highest to inequality within the north, but it is inequality reducing within the south. The 20-34 age group forms the largest economic active population and is the age group that is positively related to expenditure levels nationally, and within the north and the south. In the north, this age group is made up of largely workers in the agricultural sector, forming about 44 percent of agriculture-contributing family worker. Due to the poor community and geographical conditions (drought prone plains) and incomes, many in this age group migrate to the south for better conditions of welfare. For instance, over the years, major agricultural products from the north, like grains, shallots and maize, are sold in largely unregulated market in the south. Products like rice from the north are unable to compete

with imported rice whereas cotton production has declined since the breakup of the cotton development boards' monopoly (Shepherd *et al.*, 2006). However, migration is associated with low remittances because of lower levels of education and lack of "gainful" employment in the south. The loss of these young and energetic groups to the south coupled with the lack of adequate financial support to their families deepens inequality within the north. Albeit, in the south, the situation is different. There is some level of consistency in the level of employment of this age group. Majority of them are engaged in agricultural sector, which has two agricultural growing seasons, and have greater economic opportunities due to much improved infrastructural, public and financial services.

Within the north and the south, the contribution of education to inequality is primarily attributed to households with no education and junior secondary school/junior high school (JSS/JHS) education. A more educated head of household means higher levels of household by expenditures. In relation to our regression estimates, education plays a positive and significant role in increasing household welfare after the completion of JSS/JHS (see Table AI). This indicates that the majority of the poor who have less years of schooling would benefit less owing to their education level compared to the non-poor. This may explain why the contribution of JSS/JHS education to inequality is a very important factor explaining inequality over the period. Within the south, the completion of JSS/JHS is the most significant determinant of inequality. This may be attributed to the teeming numbers of population who have completed JSS/JHS (including migrants from the north) within the south. They are mostly found in non-farm self-employment and agricultural business activities which are associated with lower productivity and earnings. However, we note that within the north, primary education also significantly explains inequality. In effect, within the north, all levels of education are essential factors explaining inequality. This is because education level remains low for households within the north. Education plays a key role in transferring low-income self-employment activities into higher incomes; majority of the workers engaged in self-employment within the north had not achieved primary education. The proportion of adults who have never been to school is far higher than in the south. These very low levels of education greatly affect the economic activities of the households and their level of expenditure and welfare compared to the population in the south.

The relative contributions of economic activities to inequalities within the south and the north indicate that public and private sector formal activities contribute to inequality. This shows that the upper end of the income distribution contributes significantly to inequality. However, private sector informal and agricultural business also contributes slightly to inequality within the south. With regards to the informal sector, this may be due to the high rates of "vulnerable" employment exacerbated by the north-south migration in this sector within the south.

With respect to the contribution of agricultural business activities to inequality, we observe that within the north, the majority of (rural) households are engaged in self-agro crop. Farms are mainly subsistence, with only 0.07 percent employing farm workers. Family members constitute a larger majority of the farm workers and many of them are females. The north relies on staple crop production where growth has been slow due to poor agricultural climate, low levels of education, poor extension services coupled with poor infrastructure and inaccessibility to public services. This has resulted in low productivity and poor functioning markets for agricultural outputs. This has hampered the development of agricultural business within the north. In contrast, the south has a favorable agricultural climate with two agricultural growing seasons and therefore can grow several crops. The agriculture-contributing family worker is 13 percent suggesting that agriculture self-employed group is not largely dominated by subsistence farming households. The relatively improved infrastructure and accessibility to public services, particularly the availability of markets, among others support agricultural business activities within the south. For instance, the growth of peasant agriculture, notably cocoa, is concentrated in the forest belt (Mckay *et al.*, 2015). The slight contribution of agriculture business to

inequality in the South may be attributed to low earnings of many of the workers, particularly temporary workers who may have low education.

The contribution to inequality by the population that is not covered by NHIS, is positive within the south and the north. These may be explained by the observation that within both the north and the south, households that are covered by NHIS are positively related to higher expenditure levels (see Table A1).

The findings on the effects of community-level characteristics and its contribution to inequality within the North and South are also discussed below.

In explaining the contribution of community-level characteristics to the variance of expenditure, it is observed that, within the north and the south, community factors like motorable roads all year round, access to phone network and availability of daily markets are momentous factors explaining inequality. Specifically, within the north, the most important community-level contributor to inequality is access to banks (51.5 percent), whereas within the south, it is access to electricity (293 percent) and public transport (281 percent). The role of the market within the north and the south is connected to the availability of motorable roads. The availability of these public services particularly vibrant markets, motorable roads (with regards to the north and the south), financial services (with regards to the north) and electricity and good public transport (with regards to the south) facilitate the economic activities of both the agricultural (crop and export) and non-agricultural sectors. For instance, the availability of financial institutions providing loans for self-employed in non-agricultural activities may have contributed to the improvement in their welfare in urban south, particularly Accra.

6. Conclusions and policy implications

Using GLSS 6, the study provides a comprehensive review of the extent and trends of income inequality and also deepens our understanding of the determinants of inequality within the north and within the south using both household- and community-level variables. Employing both descriptive and regression methods, the findings of the study show that household characteristic such as urban location, no education, public and private formal economic activities, and not covered by NHIS are the major determinants of inequality within the north and the south. Specifically, within the north, the 20-34 year age group is the most prominent contributor to inequality. This may be attributed to the loss of this productive age group to the south through migration. The resultant very low remittances to support families back in the north because of low paid jobs engaged in by migrants tend to exacerbate extreme poverty and inequality within the north. With respect to within the south, the most important determinant of inequality is the completion of JSS/JHS. Although, completion of JSS/JHS is associated with increases in expenditure per adult equivalent within the south, it contributes significantly to inequality. This may be attributed to the high numbers as well as the economic activities of this group of the population within the south. The teeming numbers of population who have completed JSS/JHS (including migrants from north) are engaged in non-farm self-employment and agricultural business activities (informal sector) which are associated with lower productivity and earnings. In effect, both informal and agribusiness activities contribute to inequality within the south.

With respect to the contribution of community-level features, within the north, access to banks is the most vital factor to inequality, whereas within the south, access to electricity and public transport is the most important community factors. The conclusions and policy recommendations of the study provide a vital input into the post-2015 development agenda discussions for Ghana. The efforts by the Government of Ghana, development partners (DPs) and non-government organisations in scaling up investments for the Millennium Development Goals (MDGs) in Ghana over the years have certainly contributed to the progress in reducing poverty and inequality. However, policies that support sustainable

decreases in inequality within the north and the south require far more investment in these regions. Given the key findings of this study, some policy actions could be the following:

- Following from the increase in inequality over the years and the observation that inequality at the lower end of the income distribution decreased between 2005/2006 and 2012/2013, there is the need to increase investment in social protection systems which provide a safety net for the poorest people especially in tough times. A percentage of the revenues generated through the oil resource wealth could be used to finance these national social protection programs. Providing robust social protection for the poorest may help reduce the rate of net migration, the high incidence of school dropout and ultimately halt the increase in inequality.
- There is the need to develop an acceleration framework to mitigate the effect of the urban-rural divide on inequality and promote local development within the north and the south. Some of the policy initiatives must include equipping and strengthening of Metropolitan, Municipal and District Assemblies (MMDAs) to develop and implement local poverty reduction initiatives targeted at the most vulnerable groups within their district. There is also the need to increase resource availability to MMDAs in order to allow local governments to implement their own priorities in their local plan.
- Given the huge contributions of the 20-34 year age group to inequality within the north, policy makers must formulate targeted policies to prepare and equip the young population especially women as well as those already in this age bracket in order to curb migration and make them productive within the north. Some of the policy initiatives may include a more defined TVET especially for young women who are matched to job market demand in their locality. Youth initiatives with flagship programs in youth employment, training and social development can be developed and implemented at the national and district levels.
- It is important that the government prioritizes education targeting all levels within the north and the south. Policy initiatives must also be geared toward measures to reverse the decline in education quality across all levels of the education sector.
- “Vulnerable” employment resulting from the teeming masses of the population engaged in private informal activities contributes to inequality within the south. This is a vital indication to policy makers, given the faster rate at which this economic activity is increasing within the south and the north to put together targeted policies to promote formal work arrangements and provide the essential elements associated with decent work such as adequate social security among others.
- In reference to the contribution of community-level characteristics to inequality within the north, factors like motorable road network, access to bank and markets contribute immensely to inequality within the north. Clearly, the functions of DPs, NGO’s, etc. are crucial, but it needs to be continued and deepened in order to completely open up the north. Nevertheless, reduced support from DPs as a consequence of Ghana having achieved middle-income status in 2011 would have a major developmental impact within the north. Over the longer term, Ghana and the DPs should negotiate and implement an orderly, coherent, aid exit strategy, and use the potential new source of income from petroleum to supplement existing resources to expand investment within the north.
- Communities within the north can be supported by the Bank of Ghana to set up rural and community banks in their areas in order to boost economic activities whereas distressed rural banks can also be bailed out given their role in reducing inequality.
- Within the south, there is the need to scale up investments in the power sector in order to provide efficient and reliable electricity supply to boost the industrial sector

and create “gainful” employment. Investments in the construction and rehabilitation of roads are required, particularly in the remote rural areas, and an enhanced public transport system is needed to support increased and more inclusive growth.

- There is the need to strengthen the coverage and sustainability of the NHIS framework. The Government of Ghana can explore ways to make the scheme free for the very poor and most deprived communities.

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Appendix

	Parameter estimates					
	Ghana		North		South	
	Coefficient	Rb. SE	Coefficient	Rb. SE	Coefficient	Rb. SE
Urban dummy	0.567***	0.005	0.660***	0.012	0.425***	0.006
Male dummy	-0.010*	0.005	0.001	0.01	-0.009	0.006
Household size	-0.079***	0.001	-0.045***	0.001	-0.079***	0.001
<i>Age</i>						
20-34 years	0.151***	0.017	0.295***	0.031	0.082***	0.017
35-44 years	-0.028	0.017	0.057*	0.032	-0.068***	0.018
45-54 years	-0.044**	0.018	0.008	0.034	-0.069***	0.019
55-64 years						
65 plus	-0.135***	0.02	0.011	0.036	-0.138***	0.022
<i>Education</i>						
None	-0.153***	0.052	0.444***	0.085	0.01	0.038
primary	-0.028**	0.013	0.012	0.022	-0.030***	0.01
JSS/JHS	0.064***	0.011	0.203***	0.019	0.101***	0.009
<i>Economic activity</i>						
Public	0.147**	0.059	0.418***	0.144	0.685***	0.049
Private sector formal	0.061	0.06	0.222	0.162	0.529***	0.05
Private sector informal	-0.313***	0.058	-0.199	0.144	0.210***	0.047
Agriculture business	-0.497***	0.073	-0.485**	0.211	0.569***	0.075
<i>NHIS</i>						
Not covered	0.176	0.323	0.527	0.775	0.165	0.307
Covered	0.141	0.323	0.534	0.775	0.198	0.307
Constant	1.544	0.323	0.65	0.775	1.722	0.307
R ²	0.343		0.315		0.337	

Note: *, **, ***Statistically significant at 10, 5, and 1 percent levels, respectively

Table AI.
Regression results of
log of expenditure
per adult equivalent
on households
characteristics
using GLSS 6

	Parameter estimates					
	Ghana		North		South	
	Coefficient	SE	Coefficient	SE	Coefficient	SE
Motorable road network all year	0.025	0.017	-0.011	0.028	0.023	0.019
Access to electricity	0.265***	0.019	0.192***	0.033	0.186***	0.023
Access to pipe/bore hole	-0.175***	0.017	-0.242***	0.031	-0.021	0.019
Access to phone network	-0.170***	0.02	-0.026	0.04	-0.027	0.023
Access to Bank	0.198***	0.032	0.362***	0.054	0.153***	0.038
Availability of a daily market	-0.001	0.025	0.009	0.046	0.002	0.028
Access to public transport	0.266***	0.019	0.226***	0.031	0.090***	0.023
Constant	1.474					
R ²		0.31		0.29		0.28

Note: *, **, ***Statistically significant at 10, 5, and 1 percent levels, respectively

Table AII.
Regression results of
log of expenditure
per adult equivalent
on community
characteristics using
GLSS 6

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