Harnessing the Demographic Dividend in Ghana: Does the Impact of Climate Change on Agriculture Matter?

Abstract

With declining fertility and increase in life expectancy at birth, Ghana has a high proportion of working age population. However, this has not resulted in the expected boost in economic productivity. There have been a number of studies that estimated the demographic dividend while others examined the impact of climate change on agriculture. The climate change and demographic dividend nexus remain unexplained. We examined the demographics of the economically active population by engaging the literature and drawing some evidence from the 2010 Ghana Population and Housing Census. Rain-fed agriculture forms the main occupation in 8 of the 10 regions in Ghana. Extreme temperatures and erratic rainfall patterns have resulted in reduced yield and unreliable production. Agriculture recorded the lowest growth in 2013, and its contribution to the economy declined in the past two years. The benefits of the youthful population can be reaped under climate smart agriculture.

Background

Demographic dividend has been defined as a boost in economic productivity that occurs when there are growing numbers of people in the workforce relative to the number of dependents (United Nations Population Fund (UNFPA), 2015). With Ghana's declining fertility rate and increasing life expectancy at birth, we have a bulk of the population within or entering the working age (Ghana Statistical Service (GSS), 2012. Since the increase in the proportion of working age population is temporary, it is imperative to study the time path of the demographic dividend in order to ensure the right policies are set in place (Amporfu, Sakyi&Frimpon, 2014). Whiles most studies have estimated the extent, duration and determinants of the demographic dividend, others have explored the effect of climate change on agricultural production. However the effect of climate change on harnessing the dividend is yet to be explored. Amporfu et al., (2014) reported that Ghana started enjoying the first demographic dividend in 1990 and is expected to peak around 2031. Reed &Mberu, (2014) examined Nigeria's demographics and its implications on reaping the dividend. Eastwood & Lipton (2011)concluded that the dividend increases more from declining dependency than reduced natural increase, and could be increased by hastening the fertility decline or by employing more workforce.

Demographics of the working age population in Ghana

Age

Ghana's population has consistently remained youthful over the years. The under 15 population formed 44.5% of the total population in 1960, then 46.9% in 1970, 45.0% in 1984, 41.3% in 2000 and 38.3% in 2010. This shows that this group peaked at 47% in 1970 and is consistently

declining(Kwankye, 2013). Now 30 years after, the proportion of this population who survived are in the economically active age group (15-64). Thus from the 10% 2010 Census data, over half of the population (57.0%) are in this age group. This reveals that there are more hands available to work towards improving economic growth.

Education

However, whiles 1 in every 4 of the population aged 15-64 have no education, about a tenth have primary education and a little over a third completed middle or junior high school (Figure 1). This gives an idea of the quality of the working age population in Ghana.

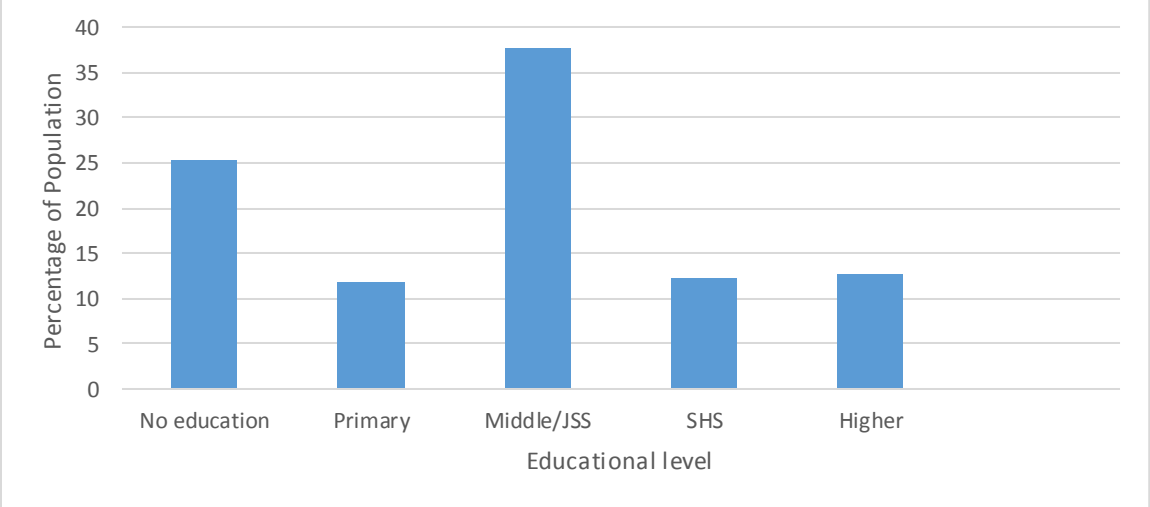

Figure 1: Educational attainment of the working age population in Ghana.

Sex

With regards to the sex, 52 percent of the 1.4 million working age population are females. This has implications on the economic activities to be provided.

Occupation

The 2010 PHC report indicates that 41.2 percent of the economically active population are engaged in skilled agricultural, forestry and fishery. Also 1 in every 5 people is service and sales worker and 15.2 percent is craft and related trade workers (Ghana Statistical Service, 2012). Thus, there is a significant statistical association between education and occupation. Whiles the population with no education are mainly involved in skilled agricultural, forestry and fishery (56.7 percent), those with primary education either have no occupation are agricultural workers.

Table 1: Percentage distribution of educational level by type of occupation

	Occupation					Total	
	No Occupation	Sales/ Services	Skilled agric/ forestry	Tech/ Craft related	Other	Percent	N
No education	14.1	12.3	56.7	11.0	5.8	100.0	357222
Primary	30.9	16.4	30.8	14.4	7.6	100.0	166476
Middle/JSS	30.2	18.5	21.7	21.4	8.3	100.0	529546
SHS	57.0	13.4	7.6	11.7	10.3	100.0	173142
Higher	31.6	12.7	5.6	15.2	34.9	100.0	179295
X^2= 374292.027, p=0.000							

Source: 2010 Population and Housing Census, Ghana

The 2010 PHC shows that with the exception of the Greater Accra and Ashanti Regions, agriculture/ forestry and fishery forms the main occupation in the remaining 8 regions. This is very pronounced in the 3 northern regions- Upper East (51.4%), Upper West (50.3 %) and Northern (54.6 %). Similarly about 4 out of every 10 of the working age population in the Brong Ahafo (BA) Region (43.3 %) are involved in agriculture. Similarly, more than half of households in these 8 regions has a member engaged in crop farming. This is again predominant in the BA (72.4%), Upper East (84.6%), Upper West (79.7%) and Northern Regions (78.0%).

Agriculture in Ghana

Agriculture in Ghana is predominantly subsistent rain fed with less than 1% irrigation farming. About 90% of farm holdings is less than 2 ha in size, therefore production varies with the amount and distribution of rainfall in the year (Martey, Al-Hassan &Kuwornu, 2012). Though certain cash crop like cocoa, rubber and oil palm occupy large farmlands, the food crops like maize, yam and rice are often small farms (Danso-Abbeam et al., 2012).

Effect of climate change on agriculture

It has been globally documented that the agriculture, forestry and fisheries sector is most susceptible to the impacts of climate change (Trawally et al., 2015; Laube, Schraven, &Awo, 2012). Climate change, coupled with land degradation often leads to reduced yield and unreliability in agricultural production in many parts of the country and Africa (ibid). Kurukulasuriya (2006) concluded that rising temperatures will reduce dryland farm income drastically, but will have little net aggregate when gains from irrigated crops offsets loses from dryland. This means that the effect of climate change on agriculture can be minimized through irrigation farming. Also Roudier et al., (2011)reported large variation incrop yield changes

ranging from −50% to +90%, and estimated the median is a yield loss due to climate change to about −11%.

Implications on Ghana's Demographic Dividend

The 2010 PHC indicates that 1 in every 4 of the economically active population in Ghana has no formal education (Figure 1). Also, 50% to 84% of households in 8 of the 10 regions in Ghana are engaged in crop farming. This means that the sector that can easily be exploited in reaping the demographic dividend is the agriculture sector. Further, Diao, Hazell &Thurlow, (2010) posits that there is little evidence to suggest that African countries can bypass agricultural revolution to successfully launch their economic transformations.

With Ghana's GDP, the Services sector recorded the highest growth(8.9%) in 2013, followed by Industry (7.0%), Agriculture recorded the lowest (5.2%) (GSS, 2014).Though the growth rate of Agriculture was an improvement over the 2.3 percent in 2012, its contribution to the economy continues to decline. Further the share of agriculture to GDP declined from 23.0 percent in 2012 to 22.0 percent in 2013.This could be due to the mass migration of the working age population due to climate change impacts. Nonetheless, crops remain the largest share of the economy (16.9% of GDP) (ibid).

Conclusion and recommendations

Crop farming is the largest contributor to GDP and is the predominant activity for the economically active population in 8 0f 10 regions in Ghana, yet it is most susceptible to the effects of climate change. The population involved in crop farming have either no or low education. Further, the contribution of agriculture to the economy declined in the past two years.

We recommend that improved agricultural techniques, specifically irrigation farming be adopted to increase productivity in the sector and enhance the harnessing of the demographic dividend.

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