The Role of Pensions in Poverty Reduction in Ghana

LARYEA MARGARET MOMO
claryea53@gmail.com

CHARLES ANDOH
chandoh@ug.edu.gh.

PATRICK ASUMING
poasuming@ug.edu.gh.
University of Ghana Business School

Abstract

The study determines the extent to which pensions contribute to poverty reduction in Ghana. Using a logistic regression model, we determine the probability of a household being poor given pension income and other socio-demographic factors. The findings, based on the most recent (2012/2013) Ghana Living Standard Survey, round six data set, revealed that pensions in Ghana have no significant impact on poverty reduction for both absolute and extreme poverty levels.

Keywords: headcount ratio, logit regression, pensions, poverty gap, poverty reduction

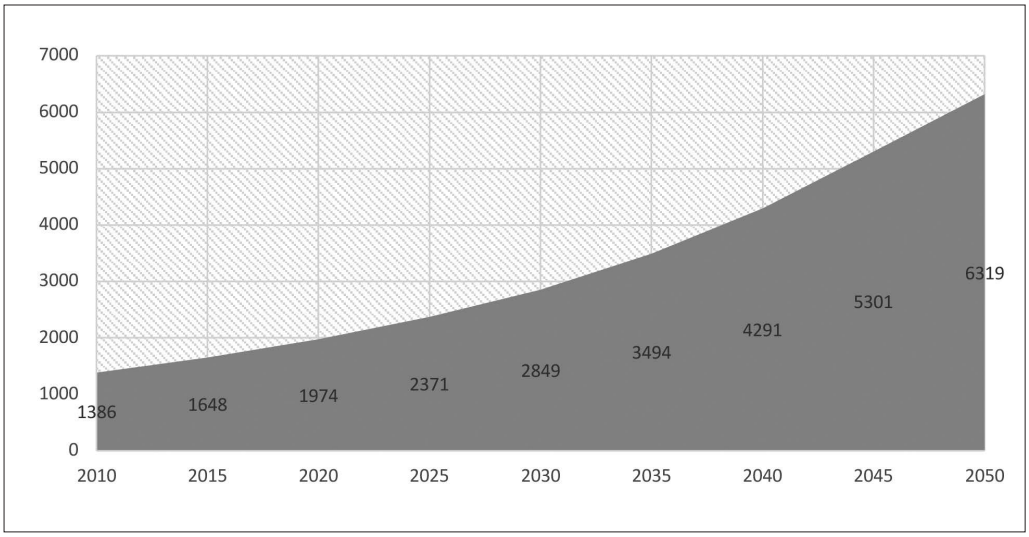
Introduction

In recent times, there has been a growing concern about the need to investigate the contributory role of pensions towards poverty reduction and this has drawn the attention of researchers (Long & Pfau, 2009; Stewart & Yermo, 2009; and Faye, 2010). Not only do pensions reduce poverty among their direct beneficiaries, but they also benefit families of the beneficiaries and the nation at large. For instance, Faye (2010) found that in the sub-Saharan African region, basic pensions have contributed significantly towards poverty reduction at the household level, which in turn have a sizable impact on poverty decline in aggregate poverty measures. However, Dethier, Pestieau and Ali (2011) noted that even in the presence of minimum pensions, old-age poverty can still persist. The authors explained that even with high pension benefits and coverage, family structures can be burdensome and hence reduce the impact of pensions on poverty reduction. In addition, the impact of pensions on poverty and inequality varies from one country to the other. For instance, Dethier *et al*. (2011) found that relative reduction in absolute poverty by universal minimum pensions in Latin America ranges from 2% in Brazil to 24% in Costa Rica. Existing research has broadly looked at social protection programmes and poverty reduction (Fiszbein, Kanbur & Yemtsoy, 2014) while a few (Dethier *et al*, 2011; Faye, 2010; Long and Pfau, 2009) have focused on pensions and their contribution to poverty alleviation. However, this study is unique as it aims to fill the research lacuna by analysing the role of the current pension scheme in Ghana towards poverty reduction by drawing a comparison between pensioners' household and that of non-pensioners' households. Furthermore, the Ghana Statistical Service (2013), in its population and housing census, revealed that Ghana's population is aging. As depicted in Figure 1, the aged constitute about 1 648 000 as at the year 2015 and estimated to increase further to about 6 319 000 in the year 2050 (Ghana Statistical Service, 2013). An important issue that calls for attention is how the existing pension scheme can support the aging population in terms of poverty reduction. This research is the first attempt to investigate the impact of pensions in poverty reduction in Ghana based on the most recent (2012/2013) Ghana Living Standard Survey, round six data set. This data set is a nationwide survey that collects information on demographic characteristics of the population, poverty, health, pension's contribution, migration and employment. It is most suitable in preparing a poverty analysis study such as this one.

From Figure 1, the aged population increases from 1 386 000 in 2010 to 1 648 000 in 2015, constituting about 18.9% growth for the period. In a similar vein, the aged population in Ghana is projected to see a percentage growth of 19.98% from 2015 to 2020. Given the increasing population of the aged (60+) in Ghana, there exists a growing concern about the possible increase in the level of old-age poverty. Also, in addressing the needs of the aged, pension schemes in Ghana have undergone several comprehensive transformations over the years and currently the three-tier pension scheme has been enforced (Kpessa, 2011b).

Given the increasing ageing population in Ghana and the relatively new existing pension scheme, the study seeks to analyse the role of the current pension scheme towards poverty reduction. As noted by Bird (2010), the prevailing poverty faced by the aged has the tendency of

Figure 1: Increasing Aged Population Estimates (in Thousand) for the Year 2010-2050



Source: Ghana Statistical Service (2013). 2010 Population and Housing Census Report

transcending to the younger generation. Hence, studies relating to the contribution of pension in poverty reduction among the aged and their households cannot be overlooked.

The remaining sections of the paper are organised as follows: Section two provides a review of literature on poverty and social protection programmes. The section also focuses on the link between pensions and poverty reduction. Section three shows the methodology employed. Section four discusses the empirical results and section five presents the conclusion.

Literature Review

The need to eradicate extreme poverty, risk, vulnerability and inequality has led about 80% of developing countries to adopt new forms of social protection programmes such as social assistance, social insurance and the labour market while others have expanded on existing ones (Fiszbein *et al*, 2014; World Bank, 2012). Social protection programmes are activities undertaken by governing and/or private bodies to enable individuals, households and communities to manage the wide variety of risk they are exposed to (Fiszbein *et al*, 2014; ILO, 2012). Social protection helps reduce the impact of crisis among the vulnerable and enables them to overcome poverty and social exclusion. According to the UN (2012), social protection programmes can serve as a major tool in fighting poverty and inequality. Also, the findings of Fiszbein *et al*. (2014) suggest that social protection programmes currently prevent 150 million people from falling into poverty. Regardless of these findings, less than half of the number of poor people in the world have access to social protection programmes (UN, 2012; Fiszbein *et al*, 2014). Furthermore, the World Bank (2012) noted that the

impact of social protection programmes on poverty reduction varies from one country to the other. Even so, the variations are paramount when considering the impact of the various social protection programmes on poverty reduction. This view is reiterated by Dethier *et al*. (2011).

Pensions are an aspect of social protection programmes that fall directly under social insurance programmes. Pension coverage in developing countries still remains low with less than 20% of the population covered (Kpessa, 2011; Stewart and Yermo, 2009). For example, Osei (2011) noted that only 10% of the working population in Ghana remain covered under the Social Security and National Insurance Trust (SSNIT) scheme. Thus, the benefits that come with pensions are enjoyed only by a few elderly people.

Similar to other developing countries, the pension system in Ghana can be considered as one that has gone through massive changes in terms of its form and content since the early years of 1946 (Stewart & Yermo, 2009; Kpessa, 2011). According to the authors, the main reasons behind the reforms in the pension systems include the need to widen pension coverage among the elderly and the need to reduce high administrative costs. Even before the emergence of pension schemes in Ghana, the extended family served as the main body responsible for providing the social, physical and financial needs of the family (Kpessa, 2011). This practice is very pronounced among rural folks. Family members thus come together and join their resources towards the collected welfare of the entire household. In this regard, the family head is responsible for decision-making and resource allocation. In subsequent years, during the colonial era, the extended family as a form of social security system was partly replaced by semiformal social security systems. The colonial government, thus, provided pension benefits to persons employed under its colonial administration. It was later in the year 1960 that the CAP 30 was formally introduced to cover government workers, university and certified teachers (Kumado & Gockel, 2003). The main challenge of the CAP 30 was that it failed to cover the majority of workers who did not qualify as government employees. In an attempt to address the limited pension coverage, the Social Security Act (Act 279), as amended in 1972 by NRCD 127, was passed to enable those employees who were previously not covered under the CAP 30 to be catered for. However, pension coverage was still limited as the Social Security Act (Act 279) made provision for only those organisations that have at least five workers covered under the scheme. The social security scheme was a provident fund that catered for the elderly, invalidity and survivors by providing a lump sum benefit to them. Seven years later, the Social Security Act (Act 279) gave way to the Social Security and National Insurance Trust (SSNIT) under NRCD 127 to manage the Social Security System. In subsequent years, the scheme was transformed from a provident fund to a defined benefit scheme. Despite these comprehensive changes, the workers raised concerns to the government suggesting that the CAP 30 under the Social Security Act (Act 279) was of much more benefit than the SSNIT scheme. Thus, the workers demonstrated and called on government to scrap the SSNIT scheme out of the system. On the other hand, the government was interested in improving the SSNIT scheme instead of the CAP 30. This led to the introduction of two additional private tiers into the existing pension system, giving rise to the current three-tier pension scheme. The three-pillar

pension scheme is believed to be an improvement in all the previous pension schemes. Table 1 summarises the evolvement of pension schemes in Ghana.

Table 1: The Evolution of Pension Schemes in Ghana

Pension Scheme	Year	Act or Law behind Formation
CAP 30	1950-2004	Pension Ordinance No. 42
SSNIT Provident Fund	1965	Parliamentary Act 279
SSNIT Provident Fund Scheme	1970-1991	NRCD 127
SSNIT Pension Scheme	1991- 2008	PNDC Law 247
Three-Tier Pension Scheme	2008-present	National Pensions Act 766

Source: Kumado & Gockel (2003); Kpessa (2011).

The evolution of pension schemes in Ghana from rural extended family care to the modern form of social security, the three-tier pension scheme, is an attempt by government to ensure that employees within the informal sector are also covered. The first and second tier are mandatory schemes. However, the first tier is a defined benefit scheme and is managed by the government. The second and third tier, on the other hand, are privately managed. Also, the third tier is an optional contribution scheme for employees within both the formal and informal sector. Even though the three-tier is proposed to have numerous benefits over the CAP 30 and the SSNIT scheme, Kpessa (2011b) noted in his study that the three-tier pension scheme has quite a number of challenges that can compromise the income security needs of beneficiaries. The over reliance on the private sector in managing the scheme is puzzling. For instance, high administration costs associated with managing private pension funds, market volatility and the lack of financial markets in Ghana to invest the pension funds coupled with the fragile private sector can lead to the creation of inequalities between different birth cohorts (Kpessa, 2011b).

Extant studies have demonstrated that poverty is a threat and hinders the growth of a nation (Stewart and Yermo, 2009; Fiszbein et al, 2014). Hence, the eradication of poverty has been an issue of global interest. The Sustainable Development Goals throw more light on this assertion with its number one goal of eradicating extreme hunger and poverty. The new post-2015 development agenda is aimed at ending extreme poverty by the year 2030 (ILO, 2012; Bates-Eamer et al, 2012). The post-2015 agenda, thus, provides an opportunity to tackle challenges associated with poverty eradication in line with sustainable development.

Detheir *et al*. (2011) noted that the eradication of poverty among the aged can be best achieved using minimum pension schemes. Faye (2010) reiterates this view and revealed that the redistributive nature of minimum pensions usually leads to poverty reduction after such cash transfers have been made. Minimum pension schemes are flat pension schemes and cater for the entire aged population in a country irrespective of their level of income, job history or the assets they own (Willmore, 2001; Faye, 2010). The advantages of this scheme, according to Faye (2010), is that they are simple and less difficult to operate and also involve very low costs of transaction. Developing countries, on

the other hand, find it problematic as such schemes are luxurious and unaffordable. Another type of pension scheme identified by Faye (2010) is the targeted flat pension scheme where pension benefits are granted to a proportion of the aged whose income or assets fall below a certain threshold, thereby enabling them to live comfortably above such income thresholds. In addition, Fiszbein *et al.* (2014) showed that the link between pensions and poverty reduction can be explained when purchasing power is transferred to the aged in the form of pension income. According to the author, pension income greatly impacts on the purchasing power of those who receive it.

In Ghana, there is a paucity of research on the role of pensions in poverty reduction. The closest related research in this area was carried out by Osei (2011) on reducing poverty and inequality in Ghana through protection programmes with a specific emphasis on the Livelihood Empowerment Against Poverty (LEAP). However, this research is unique as it aims at investigating the role of pensions in poverty reduction using the Ghana Living Standard Survey round six nation-wide data set. Thus, given the prevailing aging population and the new pension scheme in Ghana, the study seeks to find answers to the following questions. What is the intensity of poverty among pensioners' and non-pensioners households? Are pensioners' households able to escape poverty compared to their non-pensioners' households? What is the probability of a household being poor given household socio-demographic characteristics such as religion, education, sector of employment, among others? To address these questions, the methodology below is employed.

Methodology

The study uses data from the sixth round of the Ghana Living Standard Survey (GLSS 6). The analysis begins by examining the socio-demographic characteristics of pensioners' and non-pensioners' households. The sample include 105 pensioners' households and 16 667 non-pensioners' households. A pensioners' household, as used here, refers to households with at least one household member who receives a pension income. A non-pensioner household, however, refers to a household in which none of its members receive a pension income. All households that do not satisfy the above condition are not sampled.

The three poverty measures: headcount ratio, poverty gap and squared poverty gap, as proposed by Foster Greer Thorbecke (1984), is computed for pensioners' and non-pensioners' households using the expenditure-based approach.

Poverty Indices

Using household expenditure as a standard of living measure, headcount ratio, poverty gap and the squared poverty gap index is computed as:

$$\mathrm{FGT} = \frac{1}{n}\sum_{y_i<z}^{q}\left(\frac{z - y_i}{z}\right)^{\alpha}$$

where n represents the population size, q represents the number of poor households, z, the poverty line and y_i, the household expenditure. If the parameter α =0, then the equation is the headcount ratio. This headcount measures the proportion of the household who are poor. If α =1, the equation measures the poverty gap index. Poverty gap index gives the mean proportion by which household expenditure falls below the poverty line z. When α =2, the equation represent the measure of the severity of poverty in the household. Thus, this poverty index measures the degree of inequality among poor households.

In order to establish whether or not pensioners' households differ in terms of the incidence, intensity and severity of poverty they are exposed to compared with their non-pensioners households, a proportion test is carried out. We, therefore state the hypothesis:

$$H_o: p_1 - p_2 = 0 \text{ versus } H_A: p_1 - p_2 \neq 0$$

where, p_1 and p_2 are poverty measures for the respective households. We use the test statistic

$$Z = \frac{\hat{p}_1 - \hat{p}_2}{\sqrt{\hat{p}(1-\hat{p})\left(\frac{1}{n_1}+\frac{1}{n_2}\right)}} \sim N(0,1)$$

$\hat{p}$ is the pooled sample proportion and $\hat{p}_1$ and $\hat{p}_2$ are the two sample proportions, provided n_1≥30 and n_2≥30 (Moore, Notz, Fligner & Scoot Linder, 2013).

The final stage involves analysis that provides an in-depth understanding of the impact of pensions on poverty through the use of a logistic probability model. The general model for the logit regression is:

$$\Pr(Y_i = 1 | X = x_1, x_2, x_3, \ldots x_n) = F(\beta_0 + \beta_1 x_1 + \beta_2 x_2 + \ldots + \beta_9 x_9)$$

$$= \frac{1}{1 + e^{-(\beta_0 + \beta_1 x_1 + \beta_2 x_2 + \ldots + \beta_9 x_9)}}$$

where F is the cumulative standard logistic distribution function and x_1,x_2,x_3...x_n represent the following household characteristics: household size (HHS), age (AGE), marital status (MS), educational level (EDU), gender (GND), household type (HHT), region (REG), sector employed (SE) and religion (REL) of the head of the household. β gives the co-efficient of the variables. The dependent variable in the model is a binary variable, taking the values of 1 if the total household expenditure is above poverty line and 0 otherwise.

In all estimations, sampling weights are applied and standard errors are adjusted to account for clustered nature of the data.

Presentation, analysis and the discussion of findings

Table 4.1 below presents descriptive information about the sample used for the analysis. The table provides an insight into the socio-demographic characteristics of both pensioner households and non-pensioner households. Other information such as the average annual per capita expenditure and average pension income per month are also provided.

Table 4.1: Socio-demographic Characteristics of Pensioners' and Non-pensioners' Households in Ghana

Socio-demographic Characteristics of Household Heads	Pensioners' Household	Non-pensioners' Household	Full Sample
Sample Size (Number of Households)			
	105	16 667	16 772
Household size			
1-2	27.6%	29.9%	29.9%
3-5	45.6%	42.2%	42.2%
Above 5	24.8%	28.0%	27.9%
Age			
15-30	1.9%	18.6%	18.4%
31-59	9.5%	61.2%	60.9%
60 and above	88.6%	20.2%	20.7%
Marital Status			
Single	1.%	10.5%	10.5%
Married/Cohabiting	81.9%	67.7%	67.5%
Divorced/Separated/Widowed	17.1%	22.1%	22.0%
Gender			
Male	86.7%	71.7%	77.8%
Female	13.3%	28.3%	28.2%
Educational Level			
None	28.5%	37.9%	37.7%
Primary	17.2%	14.5%	14.6%
Secondary	42.2%	41.9%	41.9%
Tertiary	12.1%	5.7%	5.8%
Sector Employed			
Formal sector	35.2%	20.2%	20.4%
Informal sector	7.8%	68.4%	68.6%

Religious affiliation			
Christian	89.1%	67.1%	67.3%
Islam	5.1%	25.7%	25.6%
Traditionalist/Other	3.0%	7.1%	7.1%
Ecological Area			
Accra (GAMA)	7.8%	10.1%	10.1%
Urban Coastal	6.9%	6.9%	6.9%
Urban Forest	30.2%	18.6%	18.6%
Urban Savannah	12.1%	8.7%	8.7%
Rural Coastal	3.4%	6.9%	6.9%
Rural Forest	20.7%	23.0%	23.0%
Rural Savannah	18.9%	25.8%	25.8%
Region			
Western	12.9%	10.4%	10.2%
Central	7.6%	9.2%	9.6%
Greater Accra	22.6%	9.5%	11.5%
Volta	7.4%	9.5%	9.4%
Eastern	8.8%	11.2%	10.8%
Ashanti	13.6%	11.8%	11.8%
Brong Ahafo	8.9%	10.2%	9.7%
Northern	5.3%	11.2%	10.1%
Upper East	5.6%	8.7%	8.6%
Upper West	7.3%	8.3%	8.3%
Ethnic Group			
Ewe	13.9%	13.0%	13.0%
Asante/Fante	22.6%	21.7%	21.7%
Ga	7.8%	6.6%	6.6%
Dagarte	11.3%	7.5%	7.5%
Other ethnics	44.4%	51.2%	51.2%
Average annual per capita expenditure (GH₵)	2213.84	2106.09	2106.83
Average pension income per month (GH₵)	692.23	-	-

Source: Computation using data from GLSS 6. Percentages may not add up due to rounding off.

The majority (about 72%) of Ghanaian households have a maximum of five members. For pensioners' and non-pensioners' households, 24.8% and 28% have a large family size comprising more than five members. Household heads in Ghana consist mostly (60.9%) of individuals aged between 30 and 60. For pensioners' households, about 88.6% of the household heads are above 60 years. In addition, about 77.8% of household heads in Ghana are mostly males. In relation to marital status, about 67.5% of household heads under consideration are either married or cohabiting.

On average, 81.9% and 67.7% of pensioners' and non-pensioners' household heads respectively are married or cohabiting, with the remaining 18% of pensioners and 32% of non-pensioners' household members being either divorced, single, separated or widowed. The analysis indicate that more than half of the pensioners' and non-pensioners' household heads have attained either a primary, secondary or tertiary level of education. Specifically, 71.5% of pensioners' household heads have attained at least a primary level of education with the remaining 28.5% not having any form of formal education at all. On the other hand, 62.1% of non-pensioners' household heads have had at least primary education. From the GLSS round six data set, most of the household heads employed in the agricultural sector are in the informal sector of the economy. Also, about 7.8% of pensioners' household heads in Ghana are in the informal sector and about 68.6% of the entire household heads in Ghana are employed in the informal sector. About 89% of pensioners' households in Ghana are Christians with the remaining 8% being either Muslims, traditionalist or affiliated to other religions. This is, however, not so with the entire household population in Ghana. Religious affiliations of households in Ghana are quite evenly spread between Christians (67.3%) and Muslims (25.6%). Households affiliated to traditional or other religions form just about 7.1%. From Table 2.1, the ethnic groups of pensioners' and non-pensioners' households are also evenly spread.

Incidence, Depth and Severity of Poverty among Pensioners' and Non-pensioners' Households

Extreme and absolute poverty measures are computed for pensioners' and non-pensioners' households. In order to cater for the variations in the limited number of pensioners' households compared to non-pensioners households, a proportion test is also carried out to determine whether the poverty measures computed for the pensioners and non-pensioners' households differ significantly with respect to the incidence, depth and severity of their poverty levels. Table 2.2 and 2.3 show the absolute and extreme poverty measures of the households and their test of equality of proportions respectively.

Analyses of the absolute poverty status of the households as shown in Table 2.2 reveal that about 20% and 24% of pensioners' and non-pensioners' households respectively are poor. This suggests that out of the 105 pensioners' households under review, about 21 households are poor. For non-pensioners', about 3 978 out of 16 667 households are poor. These poor households thus have their total expenditure falling below the minimum poverty line of GH 3.6 per day.

Table 2.2: Absolute Poverty Measures (GH₵ 3.6 per day) with a Test of Equality of Proportions for Pensioners' and Non-pensioners' Households

Poverty Indices	Pensioners' Household A	Non-pensioners' Household B	Difference |A-B|	Std. Error	P-Value
Headcount ratio	0.198	0.240	0.041	0.028	0.362
Poverty gap index	0.061	0.084	0.023	1.348	0.468
Squared poverty gap index	0.028	0.041	0.013	0.176	0.633

Source: Computation from GLSS six data set. Values have been corrected to three decimal places. Degrees of freedom is 1 at 95% confidence interval

The poverty gap and squared poverty gap index for the households complement the headcount ratio. The absolute poverty gap index computed for pensioners' households is 0.061 while that of non-pensioners' is 0.084. The average cost needed to alleviate poverty in pensioners' and non-pensioners' households is about GH₵ 0.22 and GH₵ 0.29 per day respectively (average cost of alleviating poverty in the households is calculated as poverty gap index (PGI) multiplied by the poverty line, z). This approach of eliminating poverty is effective provided that such cash transfers could be precisely targeted to the poor households. In line with this, Fiszbien *et al.* (2014) suggests that poverty eradication in developing countries can be best achieved through targeting efficiency where developing countries may create new and/expand their existing social protection programmes with the aim of providing cash transfers to targeted groups. How large should such cash transfers be? Fiszbien *et al*. (2013) found that poverty eradication in Africa require extreme values in cash transfers compared to Eastern Europe and central Asia. On the other hand, Fiszbien *et al.* (2014) echoed that even if all developing countries could achieve the best targeting efficiency, only half of such social protection could stand the chance of reducing the poverty gap by 50%. The authors concluded that the issue of poverty eradication in developing countries has more to do with budgetary adequacy and not necessarily with targeting efficiency.

The squared poverty gap is also of much importance as it considers the inequality present within the households such that cash transfer from one poor household to a much poorer household reduces the squared poverty gap index. A higher squared poverty gap index will mean there exists a high inequality among households while a lesser squared poverty gap index depicts a lower inequality present. From Table 2.2, the squared poverty gap index was estimated at 2.8% and 4.1% for pensioners' and non-pensioners' households respectively. This shows that the level of inequality is lower in pensioners' households than in non-pensioners' households. This finding is in line with Bello *et al.*, (2007). All the three absolute poverty measures in Table 4.2a show that poverty is lower among pensioners' households. The squared poverty gap index, which represents the level of inequality present in these poor households, is also lower. Hence, the average cost of eliminating poverty in the entire pensioners' households is reduced.

The need, therefore, arises to establish if the difference in the poverty measures of pensioners'

and non-pensioners' households is significant. Table 2.2 shows the output results of the test carried out in this regard. Even though poverty is lower (about 20%) among pensioners' households than non-pensioners' households (about 24%), the proportion test in Table 2.2 suggests that the difference between these poverty measures is statistically insignificant. In a similar vein, the test suggests that the difference between the absolute poverty gap index and squared poverty gap index for pensioners' and non-pensioners' households is statistically insignificant since the p-values calculated are greater than 0.05. Thus, we confidently conclude that the incidence of poverty intensity and severity of poverty is not significantly lower among pensioners' households compared to non-pensioners' households.

For extreme poverty measures, Table 2.3 depicts that about 6% and 9.8% of pensioners' and non-pensioners' households respectively are poor. The difference between the incidence of poverty among pensioners' and non-pensioners' household is about 3.8%. The extreme poverty gap index also shows that the depth of poverty is intense among non-pensioners' households (about 4.8%) and the severity of poverty in these households is also very pronounced (about 2.2%).

Table 2.3: Extreme Poverty Measures (GH₵ 2.17 per day) for Pensioners' and Non-pensioners' Households with Test of Equality of Proportions

Poverty Indices	Pensioners' Household A	Non-pensioners' Household B	Difference |A-B|	Std. Error	P-Value
Headcount ratio	0.060	0.098	0.038	0.028	0.232
Poverty gap index	0.030	0.048	0.018	0.020	0.503
Squared poverty gap index	0.014	0.022	0.008	0.014	0.825

Source: Computation from GLSS six data set. Values have been corrected to three decimal places. Degrees of freedom is 1 at 95% confidence interval

The average cost (GH₵ 0.065 per day) involved in filling the extreme poverty gap for pensioners' households is lower than the cost (GH₵ 0.10 per day) associated with non-pensioners' households. Table 2.3 reveals the test of equality of proportion of the poverty measures computed. The proportion test for the poverty measures suggests that the difference between extreme poverty measures of pensioners' and non-pensioners' households is statistically insignificant. This is because p-value obtained for the poverty measures is greater than 0.05 and so we fail to reject the null hypothesis that there is no difference between the extreme poverty measures of the two households. Consequently, we conclude that the incidence, depth and severity of poverty is not lower among pensioners' households compared to non-pensioners' households.

Logistic Model Results and Discussion

The logistic model results presented throws more light on the probability of a household being poor given various household characteristics. The results of the estimates are presented in Table 2.4.

Table 2.4: Results of Logistic Model

Variable	Model 1 Odds ratio	Model 2 Odds ratio
Pensioner Status (HHT)		
Ref.: Non-pensioners' household	1.000	1.000
Pensioners' household	1.014 (0.966)	1.001 (0.997)
Sector Employed (SE)		
Ref: Informal	1.000	1.000
Formal	2.448 *** (0.000)	2.446*** (0.000)
Pensioner Status		
Sector employed: Ref: Non-pensioners' household # informal sector employment	-	1.000
Pensioners' household # formal sector employment	-	1.081 (0.939)
Religion (REL)		
Ref: Traditional/Other	1.000	1.000
Christian	1.550 *** (0.001)	1.550 (0.001)***
Islam	1.325* (0.074)	1.355* (0.074)
Gender (GND): Female	1.063 (0.681)	1.063 (0.682)
Household size (HHS)	0.758*** (0.000)	0.758*** (0.000)
Marital Status (MS)		
Ref: Never married	1.000	1.000
Married	1.051 (0.782)	1.055 (0.773)
Separated	0.733 (0.136)	0.733 (0.145)

Age		
Ref:15-30	1.000	1.000
31-59	0.790** (0.019)	0.790 ** (0.019)
60 years and above	0.622 *** (0.000)	0.623*** (0.000)
Educational Level (EDU)		
Ref: No education	1.000	1.000
Primary	0.916	0.916
Secondary	1.315*** (0.003)	1.315*** (0.003)
Tertiary	1.553*** (0.002)	1.553*** (0.002)
Intercept	10.629*** (0.000)	9.787*** (0.000)
	R squared 0.406 Adjusted R-squared 0.404 LR chi2 4115.68 Pr (> chi2) < 0.0001 Number of obs. 13340	R squared 0.404 Adjusted R-squared 0.402 LR chi2 4098.38 Pr (> chi2) < 0.0001 Number of obs. 13340

*Source: logit regression with adjusted standard errors and weights. All values have been corrected to three decimal places. NB: ***, ** and * indicates significant at 1%, 5% and 10% level of significance respectively. Region, ecological area and ethnicity are part of the control variables (see Appendix).*

Table 2.4 indicates that the independent variables: Household size, religious affiliation (Christian and Islamic religion), formal sector employment, age (31 years and above), level of education (secondary or tertiary education) of household members are statistically significant in determining the probability of a household being above the poverty line. From the results, pensioners' households recorded an odds ratio of 1.018 with a p-value of 0.9565. Pensioners' household is thus, statistically not significant in determining the probability of a household being poor. This finding suggests that pensioner status has no influence on the poverty status of a household.

In model 1, sector employed of household heads plays an important role in poverty reduction in Ghana. Household heads employed in the formal sector often have a regular flow of income compared to those in the informal sector. Furthermore, those in the formal sector are all enrolled on either the CAP 30 or the three-tier pension scheme. Thus, poverty measures show that the sector of employment of household heads plays a central role in the poverty status of the household. Given the socio-demographic characteristics, households with heads employed in the formal sector are 2.45 times more likely to be non-poor than those households with heads employed in the informal sector. Model 2 shows the interaction between sector employed and pensioners'

status of a household. The results of the interaction reinforce that pensioners' households do not influence the probability of a household being poor.

In relation to the religion, households affiliated to the traditional religion were used as the reference group. The results suggest that Christian and Muslim households are 1.54 times and 1.35 times respectively less likely to be poor than households affiliated to the traditional religion. Given the socio-demographic household characteristics, Christian and Islamic households are thus less likely to be poor than traditional households.

The coefficient of household size is significantly related to the probability of a household being poor. This is shown in Table 2.4. The odds ratio suggests that as household size increases, the probability of a household being poor also tends to increase. A household is 0.758 times likely to be poor with any additional household member. This implies that the smaller the household size, the higher the probability of that household being above the poverty line. This finding is in line with Bello *et al.* (2007). The implication from this finding is that large household size tends to reduce the per capita income of the household. The lower the per capita income, the poorer the household will be.

The age of household heads is statistically significant in determining the probability of a household being poor. The results suggest that households with heads aged 31 years and above are less likely to be non-poor than household heads below the age of 30. The odds ratio implies that households with heads aged between 30 and 60 years are 0.79 times more likely to be poor than households headed by individuals aged 15 to 30 years. In a similar vein, households headed by the aged (60 years and above) are 0.62 times more likely to be poor than household-headed individuals below the age of 31. This suggests that households with the majority of its members being aged are more likely to be poor.

Poverty itself is multidimensional and education is one aspect of it. Education, thus, demonstrates the key role of human capital in determining the poverty status among households. Education comes to play when poverty is defined as the lack of capabilities and deprivation – in this case, knowledge deprivation. The educational level of members of the household plays a significant role in determining the probability of a household being poor. From Table 2.4, households whose heads have had at least secondary school education are less likely to be poor. The odds ratio depicts that households whose heads have acquired secondary and tertiary level of education are 1.3 and 1.5 times respectively less likely to be poor than households headed by individuals without any education.

Also, variables such as the ecological area and region of a household as well as ethnicity have significant influence in determining the poverty status of a household. The findings suggest that households in the Upper West, Upper East and Volta are more likely to be poor than households in the Western region. Additionally, households in the urban areas and Accra are less likely to be poor than households in the rural savannah. For ethnicity, households who are Dagartes are more likely to be poor than households affiliated to other ethnics (see Appendix). Poverty incidence is varied across the various demographic regions in Ghana. According to Ghana Statistical Service

(2007), rural areas in Ghana are noted to have the highest poverty incidence. About 50% of the population live in rural areas and yet the sector accounts for about 78% of the population of poor people in the country. Also, the three northern regions (Upper East, Upper West and Northern) record the highest poverty incidence in the country.

Conclusion

Pension coverage has been a major challenge faced by most developing countries all over the world. In Ghana, pension coverage is limited, with about 68.6% of households remaining uncovered. Pensions, if well implemented, can reduce poverty among the aged and their households. Hence, the eradicating of poverty in all its forms can be achieved if much attention is channelled to improve pension coverage and its effectiveness.

Based on the GLSS six data set, the poverty measures computed were found to be lower among pensioners' households compared to non-pensioners' households for both absolute and extreme national poverty lines of GH 3.6 and GH 2.17 respectively. However, the proportionate test revealed that the difference in the poverty measures obtained for pensioners' and non-pensioners' households is not significant. This can be explained by the limited number of pensioners' households employed in the study. This also reinforces that pension coverage in Ghana is still limited with the majority of Ghanaian households remaining uncovered. Also, the probability of a household being poor is significantly determined by household socio-demographic characteristics.

Hence, the implication of this finding for poverty reduction in Ghana on the current pension scheme is the need to improve the scheme to overcome the weakness (insufficient pension income towards eliminating poverty) in the SSNIT pension scheme. Also, there seems to be the need to create more awareness for informal sector employees to appreciate and enrol in the current pension scheme so as to widen the pension pool. In this regard, a wider section of the population will stand to benefit. It, therefore, becomes necessary to market the three-tier pension scheme with emphasis on its availability to those in the informal sector so as to increase pension coverage and to protect the informal sector workers when they become vulnerable and are unable to work. Since the informal sector employees are often characterised by irregular income, their contribution towards the scheme should be flexible. Future research can specifically look into how managing and financing the pension scheme can aid its effectiveness in terms of pension income paid to beneficiaries.

There exists some level (2.8% and 1.4% for absolute and extreme poverty respectively) of income inequality among pensioner households in Ghana. Thus, the current pension systems in place do not favour the poor, hence the need to strengthen the existing pension scheme to see to the income security needs of the aged in the region. The younger generation and other dependents in pensioner households can also engage in activities that will generate additional household income. This will prevent households from relying greatly on pension income. The findings of this research further reveal that household characteristics such as the educational level, household

size, religious affiliation, sector-employed, age, ethnic group, region and ecological area are significant in determining the poverty status of a household. Therefore, in order to put in place a comprehensive poverty reduction measure, economic, growth and efficiency policies should take into consideration these socio-demographic barriers. Also, future research can look into the root causes of poverty in the region to contribute towards achieving sustainable development.

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APPENDIX

Dependent Variable: Probability of a Household being Above the Poverty Line				
	Model 1		Model 2	
Variable	**Odds Ratio**	**P-value**	**Odds Ratio**	**P-value**
Region:				
Ref: Western	1.000	-	1.000	-
Central	1.017	0.954	1.017	0.954
Greater Accra	0.387	0.139	0.387	0.139
Volta	0.543	0.021**	0.543	0.021**
Eastern	0.861	0.508	0.861	0.508
Ashanti	1.386	0.196	1.386	0.196
Brong Ahafo	0.807	0.383	0.807	0.383
Northern	0.423	0.019**	0.423	0.019
Upper East	0.418	0.022**	0.418	0.022**
Upper West	0.250	0.000***	0.250	0.000***
Ecological area:				
Ref: Rural Savannah	1.000	-	1.000	-
Accra	24.451	0.000***	24.451	0.000***
Urban Coastal	2.955	0.005***	2.955	0.005***
Urban Forest	2.992	0.000***	2.992	0.000***
Urban Savannah	2.890	0.000***	2.889	0.000***
Rural Coastal	1.517	0.246	1.517	0.246
Rural Forest	1.007	0.979	1.007	0.979
Ethnicity				
Ref: Other ethnics	1.000	-	1.000	-
Ewe	1.024	0.896	1.024	0.896
Akan	0.957	0.787	0.957	0.787
Ga	0.956	0.864	0.956	0.864
Dagarte	0.442	0.000***	0.442	0.000***
	R squared 0.406 Adjusted R-squared 0.404 LR chi2 4 115.68 Pr (> chi2) <0.0001 Number of obs. 13 340		R squared 0.404 Adjusted R-squared 0.402 LR chi2 4 098.38 Pr (> chi2) < 0.0001 Number of obs. 13340	

*Source: Logit regression with adjusted standard errors and weights. All values have been corrected to three decimal places. NB: ***, ** and * indicates significant at 1%, 5% and 10% level of significance respectively*