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Determinants of Poverty among Households in the Six Geo-Political Zones of Nigeria: Evidence from General Household Survey Panel 2018/2019

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ABSTRACT: This paper investigates the determinants of poverty among households, in the six geo-political zones of Nigeria. It utilizes the LSMS General House Holds Survey Panel 2018/2019 conducted by the National Bureau of Statistics (NBS) in collaboration with Federal ministry of Agriculture and Rural Development and World Bank. For a sample of 5000 households a robust OLS regressions was estimated. The descriptive results revealed that, North-West zone recorded the highest incidence of poverty while South-South zone appeared to have the lowest incidence of poverty. However, North-East recorded the highest depth and severity of poverty. The inferential results of robust OLS regressions indicate that household size has a significant nonlinear positive influence on household welfare, while age of the household head, land and house ownership have significant positive influence on household welfare. Furthermore educational attainment of the household head has the most significant positive influence on household welfare, suggesting that, educational level of a household head improves household welfare and reduces the incidence of poverty in all the six geo-political zones of Nigeria. It is therefore suggested that, government at all levels (federal, state and local government) should intensify efforts in establishing sound and workable policies geared towards enhancing human capital development through giving free and compulsory education, especially basic and high level education across all the zones of Nigeria.

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KEYWORDS:

Poverty; Households; Geo-political zones; Survey

1. INTRODUCTION

Poverty is not only a state of existence but also a process with many dimensions and complexities. Usually it is characterized by deprivation, vulnerability (high risk and low capacity to cope), and powerlessness (Lipton & Ravallion, 1995; Sen, 1999). These characteristics tend to erode people's sense of well-being.

According to United Nation Millennium Projects (UNMP) (2007) poverty proved to be the main problem in developing countries. This and many other findings make poverty to become an important topic of discussion among world leaders. This was reflected in the theme of World Vision 2020 Africa Conference held in Uganda (IFPRI, 2003). In connection to poverty, the United Nation General Assembly in 2000 adopted the millennium declaration, in which the world's 189 member countries unanimously agreed to help the poor countries of the world to achieve a better life by the end of year 2015. In this millennium declaration, it was decided by the world leaders to design a framework for progress comprising eight millennium development goals (MDGs) top of which is the eradication of extreme poverty and hunger (Vincent, 2006).

However, the progress towards the global target of halving between 1990 and 2015, the proportion of people living in extreme poverty, was very slow [United Nations (UN), 2005]. The progress is even slower in Sub-Saharan Africa (SSA) as opposed to other regions, such as East Asia, which has made remarkable achievement in reducing poverty (UN, 2005). Consequently, due to the poor performance of MDGs in Poverty eradication particularly in SSA, eradicating extreme poverty for all people everywhere by 2030 is the first among the UN Sustainable Development Goals (SDGs) expected to guide the post-2015 Millennium development agenda. Concerned with the lackluster achievement so far in SSA, even with SDGs in place, governments, donor agencies and researchers have been and are trying to identify the means of achieving the poverty reduction goals.

In Nigeria the situation is quite appalling, despite several attempts by successive governments to ameliorate the scourge. Eze (2009) explains that, the level of poverty is geometrically increasing (see also, Okpe & Abu, 2009). Poverty in Nigeria is therefore deep and pervasive, with about 70 percent of the population living in absolute poverty (Soludo, 2003).

Highlights of the 2022 Multidimensional Poverty Index survey in Nigeria reveal that: 63% of persons living within Nigeria (133 million people) are multidimensional poor. The National MPI is 0.257, indicating that poor people in Nigeria experience just over one-quarter of all possible deprivations. 65% of the poor (86 million people) live in the North, while 35% (nearly 47 million) live in the South. High deprivations are also apparent nationally in sanitation, time to healthcare, food insecurity, and housing.

In Nigeria, 40.1% of people are poor according to the 2018/19 national monetary poverty line, and 63% are multidimensional poor according to the National MPI 2022. Multidimensional poverty is higher in rural areas, where 72% of people are poor, compared to 42% of people in urban areas. The National MPI is reported with a linked Child MPI, which provides additional information on Multidimensional Child Poverty in Nigeria. According to the report: Two-thirds (67.5%) of children (0–17) are multidimensional poor according to the National MPI, and half (51%) of all poor people are children. The highest deprivations are in the indicator of child engagements – where over half of poor children lack the intellectual stimulation that is pivotal to early childhood development. The fight against poverty has been a central plank of development planning since independence in 1960. About fifteen ministries, fourteen specialized agencies and nineteen donor agencies and non-governmental organizations (NGOs) have been involved in the decades of this crusade, but still about 70 percent of Nigerians live in poverty (Soludo, 2003). Observers have unanimously agreed that, previous government interventions aimed at poverty reduction have failed to achieve the objectives for which they were established (Ovwasa, 2006; Adesupo, 2008; Omolola, 2008). Therefore, Poverty still poses a major threat to human existence in Nigeria (Adesupo, 2008).

As a result of this ugly trend, many studies on poverty in Nigeria have been completed. Years earlier, especially in the 1970s and 1980s, poverty analyses were basically descriptive centered on definition and measurement of poverty as shown in the works of Adeyokunnu (1975) and Anthonio (1975), *inter alia*. But with the development of new indices such as Foster, Greer and Thorbecke (1984) weighted poverty measures; the use of poverty profiles became popular with the studies such as World Bank (1990, 1995) and (1996); Onah (1996); Echeberi (1997); Obadan (1997); Dike (1997); Ogwumike and Ekpeyong (1996); Anyanwu (1997) etc. Consequently, in the recent times, there have been several studies that focus on the quantitative determinants of poverty in Nigeria such as Omonona (2001); Olaniyan and Abiodun (2005); Okunmadewa, Yusuf and Omonona (2005), Oni and Yusuf (2007), and Oyekale and Oyekale (2008) among others.

The current paper therefore, is an attempt to complement the several efforts by examining determinants of poverty among households in the six geo-political zones of Nigeria. This is because most of the earlier studies (such as Omolola 2008; Oluwatayo, 2009; Ibrahim and Umar 2008) made a holistic assessment of poverty at national level or at a particular zone or state, negating the importance of cross zonal analysis. Since most of the zones do not share the same socio-cultural and economic background, as such, undertaking study of this nature may disclose new facts about household poverty in Nigeria. Therefore, the study has provided a platform for poverty comparison among the zones and the policy recommendations may be used by policy makers to improve the situation. Following this introduction, theoretical framework and review of literature on the determinants of poverty have been posited in section 2, section 3 deals with data and methodology. Section 4 presents results and discussions, while section 5 provides conclusions and recommendations.

2. THEORETICAL FRAMEWORK AND REVIEW OF LITERATURE

This section deals with theoretical framework and review of relevant literature on the determinants of poverty.

Theoretical framework

Human capital theory associated with the works of Schultz (1961) and Becker (1975) provides a conceptual basis for a negative relationship between human capital development (education) and poverty. Human capital theory asserts that education creates skills which facilitate higher levels of productivity among those who possess them in comparison with those who do not (Becker, 1975). Education then, is costly but it brings associated benefits which can be compared with its costs in much the same way as it happens with any other investment project (Patrinos & Psacharopoulos, 2004). “Human capital development, especially through basic education (primary and lower secondary) helps reduce poverty by increasing the productivity of the poor, by reducing fertility and improving health, and by equipping people with the skills they need to participate fully in economy and society” (World Bank, 1995).

Asset Based Approach to the analysis of poverty is another theoretical formulation that seeks to explain the relationship between physical capital and welfare status of a particular household (Attanasio & Szekely, 1999). Poverty is most frequently measured and analyzed in terms of income flows, or the stream of consumption expenditures financed by these income flows. Therefore, information on the physical asset stocks of household that generate income and consumption flows can be used to know much about who the poor are, why they are poor etc (Carter, 2000). The asset based approach, thus, open the door to a much richer understanding of the nature of poverty and how and why it is changing over time (Carter & May, 2001). The above theories formed the theoretical basis of this study because they captured the fundamental essence of the subject matter under consideration.

Determinants of Poverty

Education and Household Poverty

Several studies have been conducted on the relationship between education and household poverty. In one of the first set of studies about the quantitative determinants of household poverty, Kyereme and Thorbecke (1991) estimate a cross-section regression model for Ghana using the 1974-75 Ghana Household Budget Survey, the findings indicates that, educational attainment of the household head is directly related to urban household calorie gap (welfare). But on the contrary the results also show that, education does not

exert much influence on income of rural household as majority of rural dwellers in the area engaged in farming and petty trading as means of generating income for their livelihood.

Similarly, in some separate studies, Rodriquez and Smith (1994), Coulombe and Mckay (1996), Cortes (1997), Szekely (1998), Garza (2002), Alemayehu and Mwangi (2005), Mok, Gan and Sanyal (2007), Philip and Willem (2002) and Martins and Fernandes (2008), Okojie (2002), Olaniyan and Awoyeni (2005), Garba (2006) and Babatunde and Olorunsanya (2008) using multivariate and logistic regression analysis, established a statistically significant positive relationship between household educational attainment and household welfare, suggesting that, education tends to improve household welfare and reduce the incidence of poverty.

On the contrary, Sadeghi, Toodehroosta and Amini (2001) examined the determinants of poverty in rural areas of Iran using farm and household cross sectional data for 1998-99. The results indicate no significant relationship between the level of household education and household poverty in the selected rural areas of Iran.

Physical Endowment and Poverty

Another major determinant of household poverty is physical endowment which has to do with the ownership of some productive assets such as land and house. Woolard and Stephan (2005) using multivariate analysis based on a sample of 600 rural households examine the determinants of income mobility and household poverty dynamics in Kwa-Zulu Natal from 1993-1998. The study reveals a significant positive relationship between household initial assets endowments such as farm land, house etc. and household welfare.

In a related development, Julie and Thomas (2007) analyze the determinants of household welfare in Tanzania using micro level cross sectional data generated from a sample of 1200 households and concluded that, physical capital such as farm land and houses plays a significant role in improving household welfare and reduces the chances of poverty trap.

Using logistic regression model based on primary data generated from a sample of 600 farmers in the project area of Asian Development Bank, Imran (2009) investigates the factors that determine rural poverty in Pakistan and found that, rural poverty is to a large extent associated with physical assets owned by the household particularly the quality of house occupied by the people. This results is in harmony with the finding of Albert and Collado (2008), Apata, Apata, Igbalajobi and Awoniyi (2010), Omotesho, Olaniyi and Fadimula (2008), Hagos and Holden (2002) and Owuor *et al* (2007).

On the contrary, in their study, Taylor and Yunz-Naude (2001) reveal a positive relationship between land ownership and rural poverty in Mexico, suggesting that land ownership increases household poverty in rural Mexico. Similarly, in a related study on rural non-farm income in Nicaragua, Corral and Reardon (2001) unveil a positive effect of land on rural poverty. This indicates that land ownership increases the level of poverty in Nicaragua. Similarly, studies by Adams (2002), Zhang and Li (2001) and Laujouw and Sheriff (2002) confirmed this finding.

3. METHODOLOGY

Sources of Data

The paper generally utilized secondary dataset. Therefore, the main dataset were drawn from the Living Standards Measurement (LSMS) Integrated Surveys on Agriculture General Household Survey Panel 2018/2019 conducted by the National Bureau of Statistics (NBS) of Nigeria, in Collaboration with the Federal Ministry of Agriculture and Rural Development and the World Bank and was released February, 2020 as a component of the revised General Household Survey (GHS) in 2010. This survey is the second round of a long term project to collect panel data on households, their characteristics, welfare and their agricultural activities. The survey was an outcome of partnership that NBS had established with the Federal Ministry of Agriculture and Rural Development (FMA&RD), and the National Food Reserved Agency (NFRA) and was supported by Bill and Melinda Gates Foundation (BMGF) and World Bank (WB). Under this partnership, a method to collect comprehensive household and Agricultural data in such a way to allow the study of agricultural role in household welfare and poverty over time was developed.

Sample Size and Sampling Techniques

The GHS-Panel sample is fully integrated with the 2010 GHS Sample. The GHS sample is comprised of 60 Primary Sampling Units (PSUs) or Enumeration Areas (EAs) chosen from each of the 37 states in Nigeria. This result arrived at a total of 2,220 EAs nationally. Each EA contributes 10 households to the GHS sample, resulting in a sample size of 22,200 households. Out of these 22,000 households, 5,000 households from 500 EAs were selected for the panel component and 4,916 households completed their interviews in the first wave. Given the panel nature of the survey, some households had moved from their location and were not able to be located by the time of the Wave 3 visit, resulting in a slightly smaller sample of 4,581 households for Wave 3. In order to collect detailed and accurate information on agricultural activities, GHS-Panel households are visited twice: first after the planting season (postplanting) between August and October and second after the harvest season (post-harvest) between February and April. All households are visited twice regardless of whether they participated in agricultural activities. Some important factors such as

labour, food consumption, and expenditures are collected during both visits. Unless otherwise specified, the majority of the report will focus on the most recent information, collected during the post-harvest visit

Variables Measurements

Dependent Variable

Household Welfare*:* The approach of using per capita consumption expenditure as proxy for household welfare has been used in many studies in Nigeria (see, World Bank 1996; FOS, 1999; Yusuf & Oni, 2007 Oluwatayo, 2009; Garba; 2006). Following these studies, the current study also adopted per capita consumption expenditure as a measure of household welfare. Similarly, per capita consumption expenditure was measured in terms of household daily consumption expenditure from all sources, food and non-food, whose higher value indicates welfare and lower value poverty.

Measures of Poverty*:* Rodriquez and Smith (1994), Okojie (2002), Garza (2002) and Garba (2006) measured poverty as binary response (poor/non poor) on the basis of poverty line, taking the values of 1 if the daily per capita consumption expenditure of a household is below poverty line, and 0 other wise. This study therefore adopted the same pattern. To this end therefore, two poverty lines absolute and relative poverty have been used as dependent variables.

Poverty Line Measure

International (dollar equivalent) poverty line has been used in many studies (see World Bank, 1996 & 2002; NBS, 2005).This study also adopted international poverty line. Two proxies have been used in measuring this variable. The first proxy is for *Absolute Poverty Line* measured as household daily per capita consumption expenditure of US$1 (equivalent to ₦720.00). The second proxy is *Relative Poverty Line* measured as household daily per capita consumption expenditure of US$2 (equivalent to ₦1440.00). Therefore, any household with daily per capita consumption expenditure less than ₦720.00 (US$1) has been considered as absolutely poor. However, any household having daily per capita consumption expenditure above ₦720.00 (US$1) has been considered as rich. Similarly, any household having daily per capita consumption expenditure less than ₦1440.00 (US$2) has been considered as relatively poor. However, any household having daily per capita consumption expenditure above ₦1440.00 (US$2) has been considered as rich.

Poverty indices

After defining poverty indicator for Nigeria, the next step is aggregating them into one poverty index. This aggregation measures are used to know the number of poor households (incidence), the extent of their poverty (depth) and severity of their poverty (Long, 1999). Most often used indices are headcount Index, poverty gap index, Sen Index, and P$\propto$ index. But the $\propto$ index proposed by Foster *et al.* (1984), Foster, Greer and Thorbecke (FGT) which is widely used to generate the headcount ratio ($\propto$=0), the depth ($\propto$=1) and severity ($\propto$=2) of poverty has been employed in this paper.

The $\propto$ class measure can be written as

$$P_{\propto} = \frac{1}{N}\sum_{i=1}^{n}\left[\frac{(Z-y_i)}{Z}\right]^{\propto} \quad \text{..... (1)}$$

When $\propto = 0, P_0 = \frac{1}{N}\sum_{i=1}^{n}\left[\frac{(Z-y_i)}{Z}\right]^{0} = \frac{1}{N} \rightarrow$ *poverty head count*

$\propto = 1, P_1 = \frac{1}{N}\sum_{i=1}^{n}\left[\frac{(Z-y_i)}{Z}\right]^{1} \rightarrow$ *Poverty gap or depth*

$\propto = 2, P_2 = \frac{1}{N}\sum_{i=1}^{n}\left[\frac{(Z-y_i)}{Z}\right]^{2} \rightarrow$ *Poverty severity*

Where:

Z = Defined poverty line

N = Total number of poor individuals/households under study

n = Number of households below poverty line

y_i = Per capita consumption expenditure (PCE) of the household whose expenditure is Below the poverty line

$\propto$ = FGT parameter which takes the values 1, 2, etc. depending on the degree of concern about poverty

Independent Variables

Household Human Capital Endowment: in the measurement of human endowment, several studies have identified a household's head education as a key variable that stands as a proxy for household human endowment (Szekely, 1998; Christian, 1997; Anyanwu, 2010), therefore, in this paper educational attainment of the household head has been used as proxy for human capital endowment.
Household physical capital endowment: Several studies on poverty have adopted Land and House ownership as proxies for physical endowment (see Christian, 1997, Groutaert & Kambur, 1995; Chaudhry 2003) equally, this study adopted land and house ownership as proxies for household physical endowment. Therefore, Land ownership has been measured as a dummy variable, taking the value of 1 if household owned land, 0 otherwise. Similarly, house ownership has also been measured as a dummy variable taking the value of 1 if a household owned a house, 0 otherwise.
Household size: has been measured as the number of individuals in the household (Omonona, 2001; Mubasher, 2009; Yusuf & Oni, 2007). Similarly, Chaudhry (2003), Garba, (2006) and Oluwatayo (2009) measured household size as the number of people living together in the same house/compound and eating from the same pot. Following the pattern of the later view, household size has been measured as the number of people living together in the same compound and eating from the same pot.
Gender of Household head: Alemayehu and Mwangi (2005), Awan and Iqbal (2010), and Chaudhry (2003) measure gender of household head as binary variable indicating whether the household head is female or male (1 if male, 0 if female). Following the same pattern, this study measured gender of household head as a dummy variable taking the value of 1 if headed by male and 0 otherwise.
Age of Household Head: Sakuhuni, *et al*. (2011) and Koster (2008) measured Age of Household as the age of household head in years. Following their own pattern, this study measured age of household head as the number of years of the household head at birth.

Method of Data Analysis

Inferential Analysis

Inferential analysis was conducted because concrete generalization will not be possible using only descriptive results. First multicollinearity test was conducted using Tolerance value and Variance Inflation Factor (VIF), in order to avoid the possibility of high correlation among the independent variables (Pallant, 2004). This was followed by heteroscedasticity test which was conducted to find out if the variances are not equal, this will give chance to know the best alternative model to apply. The welfare model was estimated using robust regressions

Model Specification

The analytical model is given as follows:

$$Percapdap = \propto_0 + \propto_1 hhsizeph_i + \propto_2 hhsizesqh_i + \propto_3 hhhageh_i + \propto_4 hhhagesqh_i + \propto_5 hhhsex + \propto_6 hhheduh_i + \propto_7 landowndumh_i + \propto_8 rentdumh_i + \mu \quad (2)$$

Where:

Percapday = *Daily per capita consumption expenditure for households (the higher the value of this measure, the higher the household welfare)*

hhsize = *Household Size*

hhsizesq = *Household Size squared*
hhage = *Age of household head*
hhagesq = *Age of household head squared*
hhsex = *Gender of household head*
hhhedu = *Educational attainment of the household head*
Landowndum = *Land ownership dummy (taking the value of 1 if owned land, 0 other wise)*

rentdump = *A proxy for house ownership dummy for post planting households (taking the value of 1 if owned house, 0 otherwise)*

μ = *Error term*
α = *parameters of the model*

4. RESULTS AND DISCUSSION

This section presents analysis and discussion of results for both descriptive and inferential analyses.

Descriptive Results

This subsection presents the descriptive results which represent the poverty profile for the six geo-political zones of the country

Table 1: Aggregate Poverty indices on the basis of International Standard for the six Geo- Political Zones of Nigeria

Geo-Political Zones	North Central	North East	North West	South East	South South	South West
Per capita index						
Relative Poverty Line	₦1440.00	₦1440.00	₦1440.00	₦1440.00	₦1440.00	₦1440.00
Headcount index	0.78	0.86	0.89	0.79	0.65	0.67
Poverty Gap index	0.48	0.60	0.60	0.52	0.49	0.45
Squared Poverty Gap Index	0.29	0.42	0.40	0.33	0.30	0.25
Absolute Poverty Line	₦720.00	₦720.00	₦720.00	₦720.00	₦720.00	₦720.00
Headcount index	0.38	0.59	0.63	0.44	0.34	0.30
Poverty Gap index	0.37	0.46	0.43	0.42	0.37	0.33
Squared Poverty Gap Index	0.19	0.28	0.24	0.23	0.19	0.16

Source: computed by the author from NBS General Household Survey Panel 2018/2019 data set, using STATA version 12.1

Table 1 presents the aggregate poverty indices on the basis of international standard for each of the six geo-political zone of the country. The results indicated that, North-West zone was having the highest incidence of relative poverty to the tune of 89% and 76% using both the per capita and adult equivalent scales respectively. On the other hand, South-South zone was having the lowest incidence of relative poverty that stood at 65% on the basis of per capita scale, while on the basis of adult equivalent, South-West zone had the lowest relative poverty count that stood at only 31% of the total households.

The results further disclosed that, still North-West zone had the highest incidence of absolute poverty that stood at 63% and 44% on the basis of both per capita and adult equivalent scales respectively. Similarly, the South-West zone maintained the lead by having the lowest incidence of absolute poverty to the tune of 30%. Moreover, on the issue of depth and severity of poverty the results indicate that, North-East was having the highest rate of both the depth (0.60) and severity (0.42) of relative poverty, and South-West zone had the lowest depth (0.45) and severity (0.25) of relative poverty

Inferential Results

This subsection consists of the results of diagnostic tests and regressions.

Multicollinearity Test

This subsection presents the multicollinearity test, conducted using Tolerance value and Variance Inflation Factor (VIF). The collinearity test was conducted in order to avoid the possibility of high correlation between each of the independent variables included in a regression model. Tolerance Value ranges from 0 to 1, where lower value is associated with high multicollinearity (Garba, 2006). While a VIF value below 10 indicates absence of serious multicollinearity problem (DeCoster, 2006).

Table 2: Tolerance Values and Variance Inflation Factor for the equation

Equation:	**Per capita Expenditure**	
	Tolerance value	Variance Inflation Factor (VIF).
Natural log of daily per capita Consumption expenditure	0.735	1.36
Household Size	0.095	10.49
Household size square	0.106	9.38
Gender of household head (a dummy variable, 1 male, 0 female)	0.916	1.09
Age of household head	0.036	27.15
Age of household head Square	0.037	26.89
Educational Attainment of household head	0.839	1.19
Land ownership (a dummy	0.884	1.13

Variable, 1 owned land, 0 Otherwise)		
House ownership (a dummy Variable, 1 owned house, 0 Otherwise)	0.894	1.12

Source: computed by the author from NBS General Household Survey Panel 2018/2019 data set, using STATA version 12.1

From the results presented in Table 2 it is clear that, all the independent variables with the exception of household size and its squared value, Age of household head and its squared value have VIF values below 10. Similarly, all the explanatory variables except the two mentioned above have tolerance value closer to one. These variables indicating evidence of multicollinearity are from the same source, as such, they should be correlated.

So both the VIF and Tolerance Values diagnostic tests, show no evidence of serious multicollinearity among the independent variables under investigation with exception of only household size and age of household head and their quadratic values. But despite the fact that, household size and age of household head and their quadratic terms are highly correlated, their coefficients are both statistically significant, indicating that, the correlation among them does not constitute any problem.

Heteroscedasticity Test

Table 3 presents the test for heteroscedasticity which has been conducted to find out if the variances are not equal, this will gives chance to know the best alternative model to apply. The test run are significant at 1% level and the null hypothesis which states that; there is no heteroscedasticity is rejected in the test run, indicating there is heteroscedasticity problem. Therefore, based on the results, robust models have been applied in order to correct the heteroscedasticity problem

Table 3: OLS Glejser Lagrange Multiplier Test for Heteroscedasticity

Model	LM Test/Chi2 Value	Remarks
Daily per capita Consumption Expenditure	810.74034***	The test statistics indicates that, the test is significant at 1%, therefore, null hypothesis is rejected and concluded that, there is heteroscedasticity, hence we use robust regression model

Source: computed by the author from NBS General Household Survey Panel 2018/2019 data set, using STATA version 12.1

Robust Regression Results

Dependent Variable:	**Natural log of daily per capita expenditure**					
Independent Variables	**North Central**	**North East**	**North West**	**South East**	**South South**	**South West**
Household size	-78.8599 (-5.32)***	-72.9418 (-8.17)***	-42.9563 (-3.79)***	-83.2293 (-3.36)***	-99.2810 (-6.53)***	-103.9888 (-5.18)***
Household size square	4.3301 (4.43)***	2.9532 (6.46)***	1.9676 (2.87)***	4.6973 (2.56)***	4.8399 (4.91)***	5.8188 (3.86)***
Gender of household head (a dummy variable, 1 headed by male, 0 female)	-64.8762 (-1.34)	-45.5042 (-0.61)	-7.3633 (-0.11)	63.4386 (2.56)**	34.7923 (1.24)	-68.1155 (-1.19)
Age of household head	4.0799 (2.36)**	9.1245 (1.89)*	6.9442 (2.28)**	2.1056 (0.38)	9.7923 (2.06)	6.7812 (1.06)
Age of household head Squared	-0.3705 (-3.08)***	-0.08553 (-1.74)*	-0.07003 (-2.42)**	-0.02350 (0.52)	-0.09136 (-2.11)**	-0.05979 (-1.01)
Educational attainment of household head	6.9916 (6.63)***	4.08872 (5.97)***	4.9924 (6.63)***	10.0008 (6.33)***	10.8948 (6.98)***	10.8458 (5.93)***
Land ownership (a dummy Variable, 1 owned land, 0 0 otherwise)	-64.8284 (-4.23)***	9.0429 (0.54)*	33.5103 (-1.58)	-30.6535 (-1.58)	-64.3246 (-3.27)***	-0.6403 (-0.02)
House ownership (a dummy Variable, 1 owned house, 0 other-Wise)	142.618 (3.29)***	-125.834 (-2.18)**	-204.671 (-2.98)***	-94.428 (-3.01)***	-61.4106 (-1.94)*	101.508 (3.29)***

R^2	0.26	0.42	0.31	0.24	0.27	0.19
F	9.75***	17.81***	10.79***	14.42***	19.13***	8.98***

Source: Computed by the author from NBS General Household Survey Panel 2018/2019 Data set, using STATA Version 12.1.
Note: the values in parenthesis are t ratios. Significant at (*** 1%) (** 5%) (*10%)

Table 4 presents the results of the determinants of household welfare for the six geo-political zones of Nigeria, when the dependent variable is log of daily per capita consumption expenditures, the results indicate a statistical significant negative relationship between household size and daily per capita consumption expenditure while the results for the squared value of the household size indicates a significant positive relationship suggesting that household size reduces the welfare of the household in the beginning, but at some point the welfare tends to improve indicating non-linear positive relationship between household size and household welfare.

With respect to gender of a household head, the results indicate no significant relationship between gender of household head and daily per capita consumption expenditure in all the zones with exception of South-East where the relationship is positive and significant. This suggests that female headed households are better up in terms of welfare than their male counterpart in the South-East zone.

Regarding the age of a household head, the results revealed a statistical significant positive relationship between the age of a household head and household welfare, except for the South-East and South-West zones where the results indicate no statistical significant relationship between age of household head and welfare. In order to capture the non-linearity effect of the relationship, age square was added, and the results unveil a significant negative coefficient, indicating that, welfare increases with age of household but eventually declines at old age.

On educational attainment of the household head, the results disclosed a statistical significant positive coefficient in all the zones, indicating that, as the educational attainment of the household head increases the level of household welfare also improves and incidence of poverty decreases.

The results on land ownership indicated a statistical significant positive relationship between land ownership and household welfare in the North-East and North-West zones, however, the results reveal a significant negative coefficient in the North-Central and South-South zones, and no significant relationship in the South-East and South-West zones.

On house ownership, the results disclosed a statistical significant negative relationship with daily per capita consumption expenditure and welfare except for North-Central and South-West zones where the coefficients were positive and significant, showing that, house ownership positively improves household welfare in the zones, this is probably because North-Central is host to the Federal Capital Territory (FCT) and other states closed to Abuja and South-West is host to Lagos former seat of power and business nerve Centre of the country were the cost of rent payment is highly exorbitant, as such directly affect the welfare of the house in the zones.

From the results, it is also clear that, F statistic which is the measure of the adequacy of the estimated model is statistically significant at 1% this indicates that the model estimated is statistically adequate.

CONCLUSIONS AND RECOMMENDATIONS

On the basis of the findings of this study, the following conclusions are drawn: Overall, educational attainment of the household head improves household welfare and reduces the incidence of poverty in all the six geo-political zones of Nigeria. Land ownership by a household head influences household welfare and reduces the incidence of poverty in the North-East and North-West geo-political zones, while it has negative consequences on welfare in North-Central and South-South zones of Nigeria.

House ownership improves household welfare and reduces the incidence of poverty in the North-Central and South-West geo-political zones, while it reduces welfare and increases poverty in North-West, South-East, and South-South geo-political Zones of Nigeria. Household size reduces household welfare and stimulates the incidence of poverty in all the six geo-political zones of Nigeria at the beginning, but at a point in time the household welfare improves.

Age of household head improves household welfare and mitigates the incidence of household poverty in all the six geo-political zones of Nigeria at initial stage, but welfare tends to reduce later at old age. Gender of household head (male/female headship) does not have any significant consequence on welfare and incidence of poverty in all the six geo-political zones of Nigeria, except in the North-Central, where a male headed household is not likely to increase poverty, and South-East, where it is more likely to reduce poverty.

It is recommended that, government at all levels (federal, state and local government) in Nigeria should intensify efforts at establishing sound and workable policies geared towards enhancing human capital development through education, especially high level education.

It is also suggested that, policies that will give access to more land particularly among the rural dwellers shall be pursued by the government at all levels. Similarly farmland ownership indicates being engaged in the agricultural sector, therefore, investment in

the sector by providing complementary inputs to reduce household poverty should be a matter of great priority to the government and even private sector of the economy.

Moreover, it is suggested that, a policy aimed at ensuring provision of mass houses at affordable rates shall be vigorously pursued by the government particularly in the various urban centers of Nigeria. This will go a long way in reducing the protracted poverty in the urban slums.

Policies that will ensure production of only productive children that will be asset rather than liabilities through provision of qualitative education should be pursued vigorously. Finally, it is suggested that, government and even the private sector should provide a sound and workable social security system that will accommodate the expected dwindling welfare in the future; such as old age benefits, trusted and reliable pension schemes etc.

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