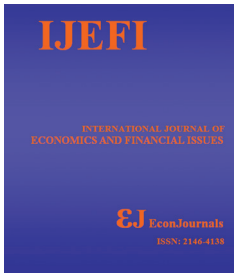

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Social Crisis, Terrorism and Food Poverty Dynamics: Evidence from Northern Nigeria

Ogunniyi Adebayo[1]*, Kehinde Olagunju[2], Salman K. Kabir[1], Ogundipe Adeyemi[3]

[1]Department of Agricultural Economics, University of Ibadan, Nigeria, [2]Szent Istvan University, Institute of Regional Economics and Rural Development, Gödöllő, Hungary, [3]Department of Economics and Development Studies, Covenant University, Ota, Ogun State, Nigeria. *Email: bayogunniyiconsult@gmail.com

ABSTRACT

Food security has become an issue of global concern in the recent time. Nigeria, with her huge endowed natural and human resources is not spared. However, food poverty in Northern Nigeria has come under threats since the emergence of series of attacks by a terrorist sect called 'Boko Haram' (BH). Since the emergence of the BH activities in Nigeria, sectors with direct impact on the wellbeing of the people has been negatively affected. The aim of this paper is therefore to examine the various ways in which the activities of BH have threatened food security and worsens food poverty in Northern zones (North West, North Central and North East) of Nigeria where the sects are dominating and imposing demeaning menace using 2010 Nigerian Living Standard Survey (NLSS) data. The data is analyzed using descriptive statistics and ordered probit. The study used mean food per capita expenditure to generate the poverty line and ordered the households into three categories; food poor, moderately food poor and food non poor. The estimate revealed that the mean food per capita expenditure (annually) was ₦25524.36 ($128.23)[1]. The study further established that 84.85% of the households in northern Nigeria are food poor in which majority are rural households, male headed households and uneducated households. Furthermore, the study found that the activities of the sect have negatively impacted the wellbeing of the northern Nigerians and increases food poverty extremely. However, interventions such as donations from foreign organizations such as UNICEF, WHO, World Bank etc. were found to improve the food security and reduce food poverty of the northerners. Therefore, this study recommends increasing intervention effort by the Nigerian government and the international community in curbing the menace of "BH." Also, state government and other stakeholders including non-governmental organization should boost awareness on productive opportunities for the unemployed women and youths; and establishment of training/development centers for the uneducated.

Keywords: Terrorism, Food Poverty Dynamics, Northern Nigeria
JEL Classifications: I32, P36, Q18

1 October 2015 conversion rate

1. INTRODUCTION

Over the last decade, Africa's impressive macro-economic performance has prompted expectations of improved living standards for the continents poorest. Nevertheless, poverty rates remain persistently high despite moderate declines in the proportion of people living on less than $1.25 a day. Statistics show that overall living costs continue to rise faster than income growth (NBS, 2013). Food poverty, driven largely by low wage growth and limited price controls for common staples, has become more pronounced in Africa and globally (Joan, 2015).

According to a joint report by FAO[2], IFAD[3] and WFP[4] in 2014 titled 'The State of food insecurity in the World' progress in reaching the Millennium Development Goal 1 to halve the prevalence of hunger and poverty has been disappointing. Although the prevalence of undernourishment has dropped by 10%, Africa still has the highest number of undernourished and household experiencing chronic food poverty than any region in the world (Jane, 2015).

2 Food and Agricultural Organization.
3 International Fund for Agricultural Development.
4 World Food Programme.

The state of household food-poverty or food insecurity is an evolving concept that is wide spread in both the developed and developing countries (Ogundari, 2013). As noted by Smith and Subandoro (2007), food insecurity continues to be a major developmental problem across the globe, thus undermining people's health, productivity and often their survival. The phenomenon is most felt in the low-income countries, especially in sub-Saharan Africa (SSA). For example, of the estimated 923 million undernourished people in the world, about 200 million are in SSA (FAO, 2008). In the words of Kuku and Liverpool (2010) and Amalu (2002), conflict, terrorism, drought, famine, degradation, deforestation, land tenure system, water stress, global climate change, extension gap, and low agricultural productivity are some of the factors restricting access to food or constraints to food production and food security in SSA.

Though Nigeria has the second largest economy in Africa, but unfortunately it also has one of the highest numbers of severely malnourished children and core food poor households in the world. According to ACF-USA (2015), approximately 24% of children under 5 years old or more than a million children suffer from malnutrition and over 40% households live in absolute food poverty (NBS, 2010). Also, Akinyele (2009) found that about 42%, 25%, and 9% of children in Nigeria are either stunted, underweight and wasted respectively in 2003. Likewise, recent statistics by Anyanwu (2012) revealed that the national poverty incidence as at 2010 is about 69%, which is about 15%, 2%, 26%, 23% and 41% higher than what was obtained in 2004, 1996, 1992, 1985, and 1980 respectively. The implication of these findings is that one of the basic development challenges facing Nigeria today is the quest for self-sufficiency in food, in spite of the enormous human and material resources. This corroborate the evidence by the National Bureau of Statistics (2010) which reported that 59.5%, 69.0% and 70.0% are poor in North Central, North East and North West respectively.

It is estimated that over one million people have fled violence in northern Nigeria, with the highest number of internally displaced people in Borno, Adamawa and Yobe states, being the states mostly affected by conflict and terrorism in Northern Nigeria (ACF-USA, 2015). The Nigerian food poverty situation is still described as appalling despite a number of efforts geared towards addressing the problem (Oni and Fasogbon, 2013). Furthermore, Attah (2012) noted that Nigeria's situation on food insecurity is highly precarious and pernicious as a significant percentage of the Nigerian population is left with only the bilious taste of poverty. However, the link between social unrest, political instability and rising food prices became apparent and critical issues in expanding food poverty.

Terrorism in Nigeria is considered a dangerous phenomenon believed to be contrary to the values and norms of the Nigerian society. The use of force and violence against the people and the destruction of properties including agricultural land which is the source of food, all with the intention to coerce or terrorize the society, is a clear violation of criminal laws and demeaning moral values. Since the uprising of an Islamic terrorist's sect called the Boko Haram (BH), began in 2002, by Mohammed Yusuf, their activities have been collectively and strongly condemned in Nigeria and by the international community for the mindless and heinous attacks on innocent citizen which have left many dead, traumatized and many properties destroyed. As reported by Leadership Newspaper, (26th February, 2014), more than three hundred people including innocent students were killed in the month of February 2014 alone. The entire Federal Government College (FGC), Buni-Yadi in Gujba local government area of Yobe state was razed down by the blood hounds BH; who now attack soft targets in remote villages and schools. The recent dimension of abduction of women and school girls (for instance, the yet to be rescued Chibok girls) has made the activities of the sect more complicated with many implications.

The BH has its origin in Maiduguri, the Borno State capital located in the north eastern part of Nigeria. Since the emergence of criminal insurgence like BH is not peculiar to Nigeria, the Millennium has witnessed several uprising of militancy activities in Africa. The demeaning impacts of terrorism in northern Nigeria and other aspects of Africa are overwhelming and multidimensional in nature.

The situation of food insecurity or food poverty in northern Nigeria with a strong linkage to conflict and terrorism is best described by the report of the World Food Summit plan of Action (1996) which stated that food insecurity occurs when;

- People experience a large reduction in their sources of food and are unable to make up the difference through new strategies.
- The prevalence of malnutrition is abnormally high for most time of the year, and this cannot be accounted for by either health or care factors.
- A large proportion of the population or group is using marginal or unsuitable strategies, and
- People are using - coping strategies that are damaging to their livelihoods in the longer term or incur some other unacceptable cost, such as acting illegally or immorally.

Most literatures (Salawu, 2010; Okpanachi, 2010; Salawu and Hassan, 2011; Fawole and Bello, 2011) seems to focus solely on physical security, that is, the security of life and property. Whereas, little attention is paid to the implication of the BH activities on food security in Northern Nigeria. Furthermore, major shortfall of these studies is their inability to examine the possible impacts of terrorism on households with quantitative techniques. However, there is no empirical evidence of the possible impacts of terrorism on food poverty in Northern Nigeria. Therefore, in this study we conducted an in-depth analysis of the food poverty in Northern Nigeria by integrating quantitative analysis with qualitative information obtained from various sources in order to portray the impact of terrorism on food poverty. Aside from providing empirical evidence, this study was carried out with a view of providing policy relevant results and recommendations for relevant established agencies and other upcoming agencies in making efficient and sustainable policies to militate against terrorism and conflicts in Northern Nigeria and reduce food poverty.

2. THEORETICAL FRAMEWORK AND FOOD SECURITY INDICATORS IN THE STUDY

2.1. Theoretical Framework

The theoretical framework for modeling household food poverty and in general food insecurity is built within the framework of household utility model. Given this, we model household utility within the framework of consumer demand and production theories in recognition that some households are both consumer and producer. In this regards, we adapted generalized household utility function proposed by Singh et al. (1986), where households' utility is model to integrate production, consumption and leisure decisions simultaneously as,

$$U_i=u(C_i,l_i|x_i) \quad (1)$$

Where, U_i is a utility function that is twice differentiable, increasing in its arguments, and strictly quasi-concave; is a vector of i^{th} household consumption demand, which include food (C_f), and non-food (C_{nf}); is time devoted for leisure and is vector of household socio-demographic variables included in order to recognize that household utility derives from combination of decisions depend on preferences of its members.

Thus, can further be defined as,

$$C_i=(C_f,C_{nf})' \quad (2)$$

Since we recognize that it is likely some households are both consumer and producer of food, then can be considered as a vector of home-produced and consumed food (f_{mp}) and market -purchase food (f_{hp}). Within this context, can further be specified as,

$$C_f=(f_{hp},f_{mp}) \quad (3)$$

Substituting equations 2 and 3 into equation 1 gives Singh et al. (1986) specification. That is, generalized utility function defined as,

$$U_i=u((C_f,C_{nf})',l_i|x_i) \quad (4a)$$

$$U_i=u(((f_{hp},f_{mp})',C_{nf})',l_i|x_i) \quad (4b)$$

But optimization of equation 4b requires that household's production and consumption decisions are made separately on the assumption that all relevant market function, especially for households that are both producer and consumer of food items and subject to certain constraints viz., production, income and time. In this case, production decisions are made first and subsequently used in allocating the full income between consumption of goods and leisure (Strauss, 1983). According to Feleke et al. (2005), it is important to have this assumption because it is believe food security or food consumption depends on production variables, but not vice-versa.

Thus, in consistent with the work of Singh et al. (1986), the production, income and time constraints impose in course of optimizing equation 4b can be specified as follows:

Production constraint:

$$F(Q_{hp},L,A^o,K^o)=0 \quad (5)$$

Therefore, equation 5 is typical household production function for commodity Q_{hp} produced at home assumed to be twice differentiable, increasing in outputs, decreasing in inputs, and strictly, convex; Q_{hp} is vector of quantity of food produced from the farms; A^o is the farm size; K^o is the fixed capita stock; L is total labor used on the farm.

Income constraint:

$$P_i(Q_{hp}-f_{hp})-P_{mp}.f_{mp}-P_{np}.C_{nf}-w(L-l_f)+N=0 \quad (6)$$

From equation 6, is the price of food produced, Q_{hp}-f_{hp} is the marketed surplus food produced; w is the wage rate; L_f is the total family labor supply on the farm; P_{mp} is the price of market purchased food items; P_{np} is the price of non-food item; f_{mp} is quantity of market purchase food; C_{nf} is non-food item demanded such as education, health, housing etc.,; N is the non-farm income adjusted to ensure that equation 6 equal to zero.

Time constraint:

$$T=l_f+l \text{ and } l_f=T-l \quad (7)$$

Where, T is household's time endowment receive in each time period, which is allocated between leisure l and time spent working on the farm l_f.

Substituting right hand side (RHS) of equation 7 into 6 gives:

$$P_i(Q_{hp}-f_{hp})-P_{mp}.f_{mp}-P_{np}.C_{nf}-w(L-T+l)+N=0 \quad (8)$$

Expanding equation 8 gives

$$P_iQ_{hp}-P_i.f_{hp}-P_{mp}.f_{mp}-P_{np}.C_{nf}-wL+wT-wl+N=0 \quad (9)$$

Re-arranging equation 9 to household income and expenditure gives

$$\underbrace{P_i.Q_{hp}+wT+N-wL}_{\text{HH Income}}=\underbrace{P_i.f_{hp}+P_{mp}.f_{mp}+P_{np}.C_{nf}+wl}_{\text{HH Expenditure}} \quad (10)$$

Equation 10 shows that the left hand side (LHS) equals household income (HH income), which comprises of the value of farm produce $P_{i.}Q_{hp}$, value of HH's time endowment wT, the value of labour used wl, and non-farm income N. Likewise, the RHS is equivalent to household expenditure (HH expenditure), which comprises of value of home produce food $P_{i.}f_{hp}$; value of market purchase food $P_{mp.}f_{hp}$; value of non-food expenditure $P_{i.}f_{mp}$ and purchase of leisure wl. The optimization of equation 4b gives rise to income and expenditure equation within the separability assumption, which is necessary to have first order conditions. It is equally possible via optimization of equation 10 to yield production and consumption equations separately. This is however discussed below.

The demand for inputs such as labour and output produced, especially for households that home produce their food can be derive by maximizing the first-order condition of the LHS of equation 10 w.r.t labour (L) and output produced (Q) as,

$$L^*=l^*(P_i,w,A^o,K^o) \quad (11)$$

$$Q^*=Q^*_{hp}(P_i,w,A^o,K^o) \quad (12)$$

Where l* is the optimum labour used and Q* is the optimum output produced when profit represented by equation 10 is maximized.

Substituting equations 11 and 12 into LHS of equation 10 representing income side of the expression gives optimum income/full income (Y*) under the assumption of maximized profit π^* as

$$Y^*=P_iQ^*+wT+N-wL^* \quad (13a)$$

$$Y^*=P_iQ^*+wT+N-wL^* \quad (13b)$$

$$\Pi^*(P_i,w,A^o,K^o)=P_iQ^*-wL^*$$

Also, household demand for food consumption C_f can be derive by solving the first–order conditions of the RHS of equation 10 representing expenditure as follows:

Recall in equation 3 that C_f is a vector of f_{hp} and f_{mp} and as $C_f(f_{hp}, f_{mp})$, but the various components of C_f also depend on their respective prices, which is thus specified as

$$C_f=c_f(P_i,P_{mp},P_{np},w,Y^*) \quad (14)$$

Because household food consumption or demand for food depends also on the preferences of its members, it is important to incorporate household demographic variables represented by X to equation 15 to shape the preferences of the households. Thus, in order to have broad determinants of C_f, we can further specify equation 14 in reference to equation 13b as,

$$C_f=c_f(P_i,P_{mp},P_{np},w,Y^*(P_i,w,A^o,K^o)|x) \quad (15)$$

Therefore, if household demand for food or food consumption could be refer to as a measure of household food and nutrition security represented by FS_i, then C_f in a reduced form of utility function of equation 1, which allows evaluation of the effects of household level as well as economic factors can be represented by,

$$C_f=FS_i=[FOOD_{exp},NT,DDS|DDI,\ldots etc]' \quad (16)$$

where FS_i, is taken as a vector of various indicators of household food and nutrition security, which could be food expenditure ($FOOD_{exp}$), nutrient intake (NT) such as calorie, protein etc., dietary diversity score (DDS) or dietary diversity index (DDI)), production index, and among others (for details see, Smith and Subandoro, 2007; Heady and Ecker, 2012; USDA-ERS, 2012; Pangaribowo et al., 2013).

2.1.1. Per capita food expenditure

The use of per capita food expenditure as indicator of food security is well documented in the literature (see Smith and Subandoro, 2007; Farid and Wadood, 2010; Heady and Ecker, 2012; USD-ERS, 2012). According to Hendriks and Msaki (2009), expenditure on food is regarded as important indications of food security because it captures the concept of vulnerability to food insecurity. Besides, food expenditure has also been used as a proxy for household poverty level. As noted by Farid and Wadood (2010), higher expenditure proportions are essential indicator of inter-temporal vulnerability to food insecurity. Therefore, a search of the literature shows that a number of studies such as Canagarajah and Thomas (2001), Omonona and Adetokunbo (2007), and Kuku and Liverpool (2010) have employed household expenditure with weighted two-third of mean of per capita expenditure as threshold to construct food-poverty line or food security line. Within this context, a household is referred to as food secure (or food insecure) when observed per capita food expenditure is greater (or less) than weighted two-third of mean of per capita expenditure. This approach is often used by the international aid organization such as World Bank to analyze household poverty in the developing economies (Canagarajah and Thomas, 2001). Guided by this, we follow previous literature to define the threshold as two-third of the mean of monthly expenditure on food, this serves as food-poverty line to classify households in the sample as either food secure or insecure.

2.2. Scope of Study

Nigeria is a relative large country which occupies about 923,768 km^2. It lies between 40161 and 130531 north latitude and between 2040' and 14041' east longitude. Nigeria is bordered in the south by approximately 800 km of the Atlantic Ocean, in the west by the Republic of Benin, in the north by the Republic of Niger and in the east by the Republic of Cameroon. Nigeria is the most populous country in Africa and indeed in the black nations of the world with a population of 140 million people, based on the 2006 National Population Census and 163 million based on 2011 National Population Commission's estimates. Nigeria population is largely dominated by three ethnic groups - Yoruba, Hausa-Fulani and Igbo. The Yoruba are in the West, the Hausa-Fulani in the North and Igbo in the East. However, there are hundreds of other ethnic groups of a wide ranging population sizes.

2.3. The Data and Data Description

The study employs data from Nigeria Living Standard Survey (NLSS) conducted in the year 2010. The sampling design of the NLSS involves a two-stage stratified random sampling technique. The first stage was a cluster of housing units called enumeration area (EA), while the second stage was the random selection of the housing unit. There were seven interviewer visits to each selected household at a minimum of 4-day intervals in a cycle of 30 days. The survey instruments are questionnaire to capture households' non-food expenditure, dairy of daily food consumption and expenditure, and to capture own produced and purchased food items by the households. The NLSS contains information on 17959 households from the Northern part of Nigeria.

The information contained in the NLSS includes detailed value of own-food produced and expenditure on the type of food

purchased by the households. For each household, expenditure profile on the following six food groups were included: (1) staples (i.e., yam, cocoyam, cassava, rice, maize, and millet), (2) meat and fish, (3) dairy products, (4) fruits and vegetables, (5) fats and oils, (6) sweeteners. And provided also in the dataset are detailed information on the non-food expenditure which includes; expenditure on education, healthcare, housing (i.e. house rent, cost of maintaining the house and the furniture), clothing (clothes, shoes), utilities, house appliance, transportation (transport fares, petrol purchased, maintenance of cars, bicycles etc.), and communication. Included also are household's socio-economic variables such as: Gender, years of education, and major occupation of household head, household with different age composition, and household size. In addition, terrorism variables captured as conflicts, theft, vandalism, robbery etc., were also available.

3. ORDERED PROBIT MODEL

This is a regression model which generalizes Probit regression by allowing more than two discrete outcomes that are ordered. Ordered probit model is used to model relationships between a polytomous response variable which has an ordered structure and a set of regressor variables. Using the food poverty line (2/3 of the mean per capita food expenditure), the food poverty level of the households will be categorized into food nor poor, moderately food poor and core food poor which will correspond to censoring values 2, 1, and 0 respectively. The standard ordered probit model is widely used to analyze discrete data of this variety and is built around a latent regression of the following form:

$$y^*=x'\beta+\varepsilon \quad (17)$$

Where x and β are standard variable and parameter matrices, and ε is a vector matrix of normally distributed error terms. Obviously predicted grades (y*) are unobserved.

However, the following will be observed:

$$y=0 \text{ if } y^*\leq 0 \quad (18)$$

$$y=1 \text{ if } 0<y^*\leq \mu 1 \quad (19)$$

$$y=2 \text{ if } \mu 1<y^*\leq \mu 2 \quad (20)$$

Here μ1 and μ2, are the cut points i.e. the threshold variables in the probit model. The threshold variables are unknown and they indicate the discrete category that the latent variable falls into. They are determined in the maximum likelihood estimation procedure for the ordered probit.

The likelihood for food poverty level by a household is

$$L=\left[\Phi\left(0-X_i\beta\right)\right]^{Z_{i1}}\left[\Phi\left(\mu_1-X_i\beta\right)-\Phi\left(0-X_i\beta\right)\right]^{Z_{i2}}\left[1-\Phi\left(X_i\beta-\mu_1\right)\right]^{Z_{i3}} \quad (21)$$

Where for the i^{th} household, y_i is the observed outcome and X_i is a vector of explanatory variables and Φ is the cumulative logistic distribution. The unknown parameters β_j are typically estimated by maximum likelihood.

y=food poverty status, (2 = nonfood poor, 1 =moderately food poor and 0=core food poor).

X_1=age (years)
X_2=Sex (Male =1, female=0)
X_3=Marital status of household head (Married =1, 0 otherwise).
X_4=Income (Naira value)
X_5=Primary occupation (farming =1, 0 otherwise)
X_6=Area of residence (Urban =1, rural=0)
X_7=Membership of cooperative (member =1, 0 otherwise)
X_8=Household structure (Monogamy=1, otherwise=0)
X_9=Food price index (indices).

3.1. Terrorism Variables (Based on Household Experience in the Last 5 Years)

X_{10}=Vandalism (1=yes, 0 =otherwise)
X_{12}=Household theft (1=yes, 0 =otherwise)
X_{13}=Robbery by force or threats (1=yes, 0 =otherwise)
X_{14}=Physical harm (1=yes, 0 =otherwise)
X_{15}=Home burglary (1=yes, 0 =otherwise)
X_{16}=various form of violence (1=yes, 0 =otherwise).

3.2. Intervention Variables (Any form of Assistance from this Organization)

X_{17}=NAPEP (1=yes, 0 =otherwise)
X_{18}=WHO (1=yes, 0 =otherwise)
X_{19}=UNICEF (1=yes, 0 =otherwise)
X_{20}=European Union (1=yes, 0 =otherwise)
X_{21}=World Bank (1=yes, 0 =otherwise).

This statistical tool was employed to compare the probability of a household falling into food non- poor, moderately food poor and core food poor categories in the study area. The model was chosen because of the polychotomous dependent variables, also the technique has no restrictive distribution assumptions (Adepoju, 2011).

4. RESULTS AND DISCUSSION

The summary statistics of the study revealed that the majority (84.85%) of the households in the northern Nigeria are food poor (Table 1), of which 95.45% are male and rural residence; where more than half are without formal education (Table 2). The mean per capita food expenditure is ₦25524.36.

4.1. The Effect of Social Crisis on Food Poverty in Northern Nigeria

The result of the Ordered Probit model was used to investigate the effect of social crisis vis-a-vis terrorism on food poverty in Northern Nigeria (Table 3). The three categories of food poverty- food poor, moderately food poor and food non-poor formed the dependent variables as ordered 0, 1 and 2 respectively while 24 explanatory variables were considered in the model. However, only 21 were allowed in the model from which sixteen

were statistically significant at various levels. They are sex, age, marital status, household structure, food price index, income, household theft, vandalism, home burglary, robbery, physical theft, physical harm various forms of violence, NAPEP intervention, WHO, UNICEF intervention, World Bank intervention and European Union intervention. The likelihood ratio chi-square of 81.43 with a P-value of 0.0000 reveals that the model as a whole is statistically significant. The Pseudo R^2 is 0.1453.

Table 1: Food poverty status of the households

Food poverty status	Percentage	Per capita mean food expenditure
Food poor	84.85	₦15552.63
Food non poor	15.15	₦81390.11
Pooled		₦25524.36

Table 2: Food poverty profile

Variables	Food poor	Per capita mean food expenditure
Gender		
Male	95.48	₦23506.98
Female	4.52	₦60357.89
Area of residence		
Rural	83.44	₦25625.80
Urban	16.56	₦24979.45
Education		
Learned individuals	42.52	₦22050.81
No formal education	57.48	₦28312.34

Sex (male headed) is significant ($P < 0.05$) and positively related to food poverty. This shows that being a male headed household increases the vulnerability of the households to food poverty i.e., it will lead to a 2.48 decrease in the log odds of being moderately food poor and food non poor status given all of the other variables in the model are held constant. Age of the household head and Household structure were found to significantly affect food poverty at 5% and 10% respectively. However, this has a negative relationship with food poverty. By implication, a unit increase in the age of the household head and being a household with monogamy structure leads to increase the log odds of being food non poor. This is consistence with the findings of Ogundari (2013).

Food price index was found to have a positive relationship with food poverty. This implies that as the price of food increases in the market (in case of insurgency) the household tends to be food poor due to the fact they are restrained from engaging in their productive activities. Therefore, it leads to decrease in the log odds of transiting to moderate food poor or food non poor by 3.60. This evidence is corroborated by the study of Awodola and Oboshi (2014), which illustrate that food price hike is an important indicator of food insecurity in Northern Nigeria. Their study examined the possible implication of BH activities on agricultural sector and discovered that about 34.78% respondents emphasized increased prices of staple food, 19.57% stressed decreased food supply, 15.22% underlined shortage in food access, and the remaining 30.43% identified inability to cultivate and rear of crops/livestock. In this case, the people in Northern

Table 3: The estimation of effect of Social on Food Poverty in Northern Nigeria

Variables	Odd ratio based on food poverty (Food expenditure)	Standard error	Z value	Marginal effects of food poor	Marginal effects of moderate food poor	Marginal effects of food non poor
Household variables						
Sex	2.48**	1.155	2.09	−0.44	−0.54	−0.03
Age	−0.01**	0.006	−2.05	0.00	0.00	0.00
Marital status	0.63**	0.272	2.32	0.17	-0.08	0.05
Household structure	−0.83***	0.492	−1.69	0.16	0.44	0.51
Occupation	−0.08	0.078	−1.02	0.02	0.11	0.01
Food price index	3.60**	1.43	2.52	−0.97	−0.80	−0.44
Area of residence	−0.19	0.197	-0.95	0.07	0.07	0.04
Income	0.21***	0.114	1.91	0.02	−0.01	0.01
Member of social group	−0.03	0.150	-0.26	0.04	-0.03	0.02
Terrorism variables						
Household theft	0.20***	0.108	1.87	−1.18	1.58	−0.88
Vandalism	5.51	142.507	0.04	0.00	0.05	0.03
Home burglary	0.42*	0.128	3.28	−0.42	0.40	0.22
Robbery	0.20***	0.108	1.87	0.06	0.07	0.03
Physical theft	0.14	0.112	1.22	0.38	0.34	0.18
Physical harm	0.20***	0.111	1.79	0.12	0.11	0.06
Various forms of violence	0.64**	0.268	2.40	−0.16	0.14	0.07
Intervention variables						
NAPEP	0.41**	0.181	2.24	0.04	0.11	−0.06
WHO	−0.22***	0.131	−1.71	−0.11	0.07	0.04
UNICEF	−0.19***	0.106	−1.83	0.08	0.05	0.33
World bank	−0.30***	0.162	−1.85	0.56	0.10	0.06
European Union	−0.95*	0.322	−2.93	0.39	0.34	0.26
/cut1	12.52946	437.7623				
/cut2	14.18821	437.7623				

***Significance at 1%, **significance at 5% and *significance at 10%

Nigeria may not have economic access to provide for themselves the quality of food needed for a healthy life. The availability of food which is strongly dependent on the cultivation of crops as well as breeding of live stocks has considerably decline due to activities of BH, creating a situation of food scarcity. A situation considered an offence against the teaching of the Holy Quaran. In the words of Abdulkadir (personal communication, April 10), no man should deprive another their means of livelihood including the satisfaction of hunger. A public servant in Northern part of Nigeria presented the condition of living as pathetic; he retorted that "what is keeping the people together is the spirit of brotherhood as some people now go on credit for food supplies and items" (Babagana, supplies and items).

It is deduce from available evidences that the hike in transportation leads to increase in the cost of food items with dwindling consequences on the purchasing power. Furthermore, Henk-Jan and Hendrix (2011) noted that rising food prices (via this channel) contributes to food insecurity and worsens the threat to human security. Accordingly, Yahi (personal communication, April 11, 2012), a government official in an interview expressed fear of the impending food crisis in Northern Nigeria, and the turning effect on the cost of movement of produce to the market. In addition, the security challenges of the check points mounted by security agents may likely hinder free and speedy of movement of goods and people. The situation, according to security operatives is seen as the unintended consequences of BH activities (Olawale, Personal communication, April 11, 2012).

In relation to the terrorism variables, household theft and burgling of the households by the terrorist group in Northern Nigeria especially the renowned "BH," subjected the household to being food poor and reduces the log likelihood of the household in transiting to being non-food poor. This thereby enhances the potentiality of being food insecure. In support of this findings, Maigari (personal communication, April 10, 2012) and Betara (2012) reported that incessant attackand closure of the market at various time has also contributed to the decline in profit margins of sellers. Sometimes, food stores are locked and goods perished as farmers, food sellers and transporters are scared or run away to avoid being casualties. Put differently, traders are barely in business as the level of sales remains poor (Mamza, Personal communication, April 10, 2012).

Robberies during insurgency, physical damage to individuals, farms and households and various forms of violence in Northern Nigeria were found to statistically increase food poverty. By implication, the insurgency activities reduce the log odds of transition to moderately food poor and food non poor by 0.20, 0.20 and 0.64 respectively. Supportively, one -on -one in-depth interview conducted by Awodola and Oboshi (2014) reported that Faiza (2012), a lecturer at the University of Maiduguri described the threats to agricultural sector as "disturbing." He argued that the industry is experiencing low productivity as many farmers have abandoned their farms for fear of attack on their farm lands, which may translate to low yield (Faiza, Personal communication, March 16, 2012). Another lecturer admitted that this development is further compounded by what he referred to as "farmers drain." He explained that youths from rural areas have deserted their farm lands and migrated to Maiduguri to join the Jihad' while other had moved to neighbouring states or countries (Aliyu, Personal communication, March 16, 2012). In both cases, lower yields in agricultural production should be expected, thus affecting availability and accessibility to food. Already fear have been expressed at different levels of government of the possibility of food crisis. For example, the United Nations in February 2012 "expressed fears that the activities of the BH sect would make it difficult for the World Food Programme to source its supply from Nigeria to affected areas in the Sahel region" since Northern Nigeria is a vital link with regard to food availability and supplies to the Sahel region (Olusina, 2012).

Interventions from various international organizations (WHO, UNICEF, World Bank, European Union) except the national intervention programme (NAPEP) had a statistical negative relationship with food poverty in Northern Nigeria. This implies that these intervention programmes and aid have dwindle the level of food poverty in the Northern Nigerians. For instance, World Bank recently indicated her plan to spend 2.1 billion dollars ($2.1billions) in rebuilding the devastated north east of Nigeria. This came just as the World Health Organization (WHO) has also indicated interest in investing $300 million on immunization against malaria scourge in Nigeria (Vanguard, 2015). Meanwhile, the Bill and Melinda Gates Foundation will collaborate with Dangote Foundation to ensure that the country maintains its zero polio case record of the past 1 year which if maintained for the next 2 years would make Nigeria fully polio free. This implies the reduction in the amount of money spent in treating various diseases or health issues, can be transfer to enhance household food security status.

5. CONCLUSION AND RECOMMENDATION

The study examined the impact of terrorism on the threat to food security in Northern. Available evidences from data analyzed established probable threat to food security in Northern Nigeria and beyond due to the activities of BH. To this end, effort by the government of Nigeria, and the international community, in curbing the adverse consequences of BH on food availability and accessibility need to be intensified. Also, state government and other stakeholders including non-governmental organization should boost awareness on productive opportunities for the unemployed women and youths; and establishment of training/development centers for the uneducated youths in order to prevent them from being an instrument of violence. In addition governments should embark on a short time remedial measures and direct intervention by distributing food items and necessary vaccinations from the national reserve in order to ameliorate the severe economic hardship being experienced by the people.

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