

**PERCEIVED EFFECT OF ECONOMIC RECESSION ON FOOD SECURITY
STATUS OF SMALLHOLDER FARMERS IN SELECTED LOCAL
GOVERNMENT AREAS OF NIGER STATE, NIGERIA**

¹Coker, A.A.A., ¹ Salaudeen, A., ¹ Mohammed, Y., ¹ Sanusi, S. and ² Alabi, O.O.

Department of Agricultural Economics and Farm Management, Federal University of
Technology, Minna, Nigeria

Corresponding Author's E-mail: ayodejicoker@futminna.edu.ng

08034091353

ABSTRACT

The recent economic recession in Nigeria has been associated with numerous socio-economic challenges among the populace and in particular, the smallholder farmers. This study therefore determined the effect of the economic recession, as proxied by farmers' perception of recession, on the food security status of smallholder farmers Niger State, Nigeria. A multi-stage sampling technique was employed to select 90 respondents from Bosso and Chanchaga Local Government Areas of the State. Data analysis was through descriptive, inferential statistics and attitudinal measuring scale. Majority (74.4%) of the respondents were males, 61.1% were married, with mean household size of 6 and average annual income of ₦36,033.33. Also, considerable proportion (93.3%) of the respondents was aware of economic recession, through the extension agents (60.0%) and cooperatives (52.2%). The weighted means (X) of the Likert scales revealed that respondents had strong negative perception of economic recession on food security, as it relates to changes in consumption pattern ($X=4.33$), threat to household food security ($X=4.07$), adjustment in household expenditure ($X=3.98$) and high cost of food production ($X =3.72$). Considerable population (61.1%) were food insecure, while respondents' perception of recession (proxy for economic recession) had significant and inverse relationship with the food security status of respondent at 5% probability level. The study recommended that farmers should diversify their economic activities, adopt sustainable and smart coping strategies and maintain manageable household sizes in order to ameliorate the effect of economic recession.

KEYWORDS: Economic recession, food security, socio-economic challenges, Nigeria

INTRODUCTION

Nigeria has the potential to adequately feed its growing population by virtue of its human and natural resource

endowments. However, this potential has remained elusive over the years, since the shift in emphasis from agriculture to crude oil and gas in the

late 1960s. As a result, the country's growth continued to be driven by consumption and high oil prices (Federal Ministry of Budget and National Planning, 2017). After more than a decade of economic growth, the sharp and continuous decline in crude oil prices since mid-2014, along with a failure to diversify the revenue sources and foreign exchange in the economy, led to economic recession in the second quarter of 2016 (Federal Ministry of Budget and National Planning, 2017). According to the Central Bank of Nigeria (2012) and Shido-Ikwu (2017), recession represents a stage in the business cycle contraction, and it refers to a general slowdown in economic activity for two consecutive quarters. This period is associated with decline in certain macroeconomic indicators such as gross domestic product (GDP), investment spending, capacity utilization, household income, business income, and inflation, with the attendant increase in the rate of unemployment. CBN (2012) affirmed that when an economy recorded two consecutive quarters of negative growth in real GDP, it can be said to be in recession. Nigeria entered into recession, given negative GDP growths of - 0.36% and - 1.5% within the first and second quarters of 2016 respectively. According to Agri *et al.* (2017), the recession affected socio-economic lives, general living standards, production, as well as

consumption. Shido-Ikwu (2017) affirmed that Nigeria's economy lost over 500,000 jobs, witnessed downward power supply, unemployment, stagnant wages, decline in retail sales and downward trend in labour productivity of -0.4 per cent. Several other researchers (Sell *et al.* 2010; and Oyewole *et al.* (2017) have also linked food insecurity to economic recession. Arising from the aforementioned, it is not unlikely that the recession influenced socio-economic activities of the rural populace, including, but not limited to consumption and farming activities in Nigeria. Salaudeen (2017) also argued that food accounts for a large and increasing share of the family budget for poor and that if prices of staple food soar as a result of recession, poor people mostly bear the brunt. The source further averred that there was a general economic decline during recession, as the purchasing power of the citizen was eroded due to poor or low income as the price of food and other commodities soared high. These are attendant effects of the economic recession as posited by CBN, 2012).

According to the Food and Agriculture Organization (2009), food insecurity exists when people do not have adequate physical, social and economic access to food. This according to the organisation, could result in undernourishment when caloric intake is below the minimum

dietary energy requirement (MDER), defined as the amount of energy needed for light activity and a minimum acceptable weight for attained height. FAO (2009) further established that increase in food insecurity could be attributed to high domestic food prices, low personal incomes and increasing unemployment. Against this backdrop, this study determined the effect of farmers' perception of economic recession on their food security status in Bosso and Chanchaga Local Government Areas of Niger State, Nigeria. Specifically, the study determined the extent and sources of awareness of economic recession among farmers, farmers' perception of economic recession, determined respondents' food security status and ascertained the effect of farmers' perception of economic recession on their food security status. The study hypothesized that there was no significant relationship between farmers' perception of recession and their food security status. Without preconception to the fact that Nigeria recently moved out of economic recession, this study will support the Nigerian Economic Management Team, Niger State Government and Federal Government in fully stabilizing the economy and avoiding relapse into recession or worse still depression, while providing policy options for ameliorating the effect of

recession on food security status of farmers in the study area.

Conceptual and Theoretical Frameworks: Economic recession is an economic phenomenon, which refers to the reduction of economic activities, manifesting in the decline of the gross domestic product, investment spending, capacity utilization, household and enterprise incomes and inflation, with associated high rate of unemployment, bankruptcies, currency fluctuation, mostly devaluations, financial crisis (CBN, 2012; Fapohunda, 2012). A country is classified as being in recession, when its economy recorded two consecutive quarters of negative growth in real GDP (CBN, 2012).

From the conceptual perspective, economic recession is associated with the business cycle, connected with periods of boom, recession, slump and economic recovery as reflected by fluctuations in GDP growth. Contributing to the dialogue on business cycle viz-a-viz the Austrian theory of business cycle, Horwitz (2011) noted that the fluctuations in the business cycle was not unconnected to the effect of excess supplies of money on interest rate, thereby causing inter temporal discoordination that initially manifested as an unsustainable boom and then a bust. However, arguments on the theory of recession have been varied.

While some schools of thought have argued that recession was a consequence of boom as detailed by the Austrian Business Cycle and Hangover theories, the neo classical economists on the other hand, are of the view that state interference in market, labour union, monopolies and technological shocks are external causes of recession. However, the Keynesians attributed economic recession to ineffective demand and poor economic planning. This school of thought opined that because wages and prices adjust slowly during recession, distortion in production and consumption may move the economy away from its desired level of production and employment for an extended period of time. They rather refocused attention on the relationship between investment decline and the entire economy, which the two theories were deficient in explaining. Gordon (1999), in the review of the hangover theory, harped on the hasty conclusion in Krugman's hangover theory and aligned with the Keynesian position which relegated both the Austrian and Hangover theories.

Economic recession is a product of internal and external factors. According to CBN (2012), the former is borne out of conflict of ideas, misapplication of economic theory and regulatory negligence or policy inconsistency. Other factors were the overheating of private sector,

excessive investment in real estate, with non-commensurate returns, corruption, structural and policy distortion. In Nigeria however, Shido-Ikwu (2017) averred that the recent recession of 2016 was associated with factors such as over dependence on oil and gas revenue, low sovereign savings, political risks, fiscal leakages and official corruption.

Food and Nutrition Security: According to the definition of food security concept of the 1996 World Food Summit, food security refers to a condition in which all people, at all times, have physical, social and economic access to sufficient safe and nutritious food that meets their dietary needs and food preference for an active and healthy life. The United States Department of Agriculture (undated) refers to household food security as access by all household members at all times to enough food for an active healthy life. Further on food security, Salaudeen (2017) noted that the measurement of food security is based on the concepts of availability, access, utilisation, stability. While the availability criteria relates to physical presence of food, access has to do with the ability of the households to acquire adequate amount of food through varied combinations, comprising home production and stocks, purchases, gifts, borrowing and aid. Utilization on the other hand refers to

household's ability to consume the food it has access to and stability entails condition where food is regularly and periodically available and affordable so that it contributes to nutritional security. FAO (2017) in its "State of Food and Nutrition in the World" established that the number of chronically undernourished people in the world increased in 2016 to 815 million, up from 777 million in 2015. The report further affirmed that the food security situation worsened in sub-Saharan Africa, situated mainly in conflict zones combined with drought and floods. At the home front, Nwajiuba (2012) noted that Nigeria faces huge food security challenges, as about 70 per cent of the population lives on less than US\$1.25 per day, thus suffering from hunger and poverty. The challenges of sustainable food security in the country, as highlighted by Salaudeen (2017) were conflicting government policy, rudimentary agricultural practices, population increase, environmental issues and corruption.

Perception and Behaviour Analysis: Literature is replete with numerous theories on perception and behaviour analysis. Duvel (1987) for instance, showed that the causes of behaviour were largely human needs, perception and knowledge. These variables influence adoption or a given cause of action, while the consequences of this behaviour are manifested in household

physical and economic efficiencies and human social activities. Parminter and Wilson (2003) in the theory of reasoned action; posited that peoples' behaviours are strongly related to their attitudes towards the behaviour.

METHODOLOGY

Study Area: Niger State lies in the North Central of Nigeria and is located between Latitudes 8° 20' and 11° 30' North and Longitudes 3° 30' and 7° 20' East (Bako, 2018) in the sub-humid climate zone of the tropics. The State comprises mainly of two dominant seasons, namely the wet and dry seasons. Mean rainfall ranges between 750mm and 3,000mm, while average annual minimum temperature is put at 22°C (African Development Bank, 2013). The soil consists of two zones; the interior zone of laterite and the zone of alluvial soils. The main types of soil are regosols, gleysols, acrisols, ferrasols and alisols. Others are luxisols, cambisols, luvisols, nitosols, arenosols and vertisols ((African Development Bank, 2013). Climatic conditions in the state support numerous crops such as yam, rice, maize, cassava, millet, ground nut and cowpea (Bako, 2018). The study was conducted in Chanchaga and Bosso Local Government Areas of Niger State.

Sampling Techniques and Sample Size: A multi-stage random sampling technique was adopted. Stage one

involved the random selection of two Local Government Areas (Bossou and Chanchaga) out of the twenty five LGAs of Niger State. Stage two entailed the random selection of five per cent of villages in each LGA, while stage 3 covers the selection of 90 respondents from the sample frame using the Yamane Sample size determination model at 5 per cent precision level. In all, 52 and 38 respondents were selected from Bossou and Chanchaga LGAs respectively.

Method of Data Collection: The study utilised cross sectional data obtained from primary source, collected with the aid of questionnaires. Primary data collected covers the socio-economic characteristics of farmers, input and output data and perception related data on food security and effect of recession of food security. Relevant data were sourced from Niger State Agricultural Mechanization and Development Agency. Data collected were analysed using descriptive statistics, Likert Scale, Foster Greer and Thorbecke (FGT) model and Probit model.

Model Specification: A 5-point Likert scale was utilised to determine farmers' perception of economic recession on their food security status. The perception weights were rated as strongly agreed (5), agreed (4), undecided (3), disagreed (2) and

strongly disagreed (1). A cut-off mean score of 3.0 was used as decision threshold. The results obtained served as proxy for economic regression. The cut off mean was calculated as:

$$= \frac{5+4+3+2+1}{2} = 3 \quad (1)$$

Foster, Greer and Thorbecke (FGT) model: This model was employed to determine the food security status of respondents

$$\text{FGT Index} = \frac{1}{N} \sum_{I=1}^{H_I} \left(\frac{z - y^I}{z} \right) \propto \quad (2)$$

Where:

N = Total number of respondents;

y_i = Income of each individual I ;

Z = Food security line using mean income of farmers in the study areas

H_i = The number of individuals who are not food secured (those with incomes at or below z)

α = Food security aversion parameter index which takes on the values of 0 and 1 representing incidence of food unsecured and food secured (Foster *et al.*, 1984)

FGT_0 , FGT_1 and FGT_2

Where $\alpha = 0$, the formula reduces to the headcount ratio: the fraction of the population that lives below the food security line, represented as equation 3

$$\text{FGT}_0 = \frac{H}{N} \quad (3)$$

With $\alpha = 1$, the formula reduces to the food secured gap index, equation 4.

$$\text{FGT}_1 = \frac{1}{N} \sum_{I=1}^{H_I} \left(\frac{z - y^I}{z} \right) \quad (4)$$

With $\alpha = 2$, the formula reduces to the food secured gap index, equation 5.

$$FGT_1 = \frac{1}{N} \sum_{I=1}^{H_I} \left(\frac{Z - Y^I}{Z} \right)^2 \quad (5)$$

Probit Regression Model: The Probit model was employed to determine the effect of recession (proxied by farmers' perception of recession) on their food security status. The model is explicitly defined in equation 6.

$$Y_i = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots + \beta_n X_n \quad (6)$$

Where;

Y = Food security status; $Y_i = 1$, if respondents are food secured and $Y_i = 0$, if respondents are not food secured

X = Vector of independent variables

β_1 - β_n = Coefficients of the independent variables

α = error or disturbance term

X_1 = Age (years)

X_2 = Household size (numbers)

X_3 = Education (years)

X_4 = Experience (years)

X_5 = Farm size (hectare)

X_6 = Farmers' perception of recession (Likert Score)

X_7 = Cooperative (years)

RESULTS AND DISCUSSION

Demographics and Awareness of Economic Recession: The results in Table 1 show that majority (74.4%) of the respondents were males, implying male domination of agricultural production in the study area. This

agrees with the findings of Ogunlade (2007) who reported male dominance of agricultural production, but runs contrary to the outcome of African Development Bank (2014) which reported that 70% of Africa's small holders are women and account for 90% of Africa's agricultural production. Considerable proportions (61.1%) of the respondents were married. Egwu *et al.* (2008) reported that married people play active role in agricultural production, based on poverty levels. Almost half of the respondents maintained household sizes of between 6 and 10 persons, with mean household size of 6. This implies that respondents maintained fairly large households, which has implications for household expenditure pattern and farm enterprise operation, all things being equal. Majority (77.8%) of the respondents earned between ₦20,001 and ₦50,000 per annum, with mean income of ₦36,033.33. Placed against the ₦18,000 monthly minimum wage, it thus implies that most of the farmers in the study area are low income earners. In addition, 93.3% of respondents were aware of economic recession, with extension agents and cooperative societies, being the main sources of awareness.

Food security status of respondents: The results in Table 3 show that majority (61.1%) of the respondents were food insecure, translating to a

food security incidence of 0.61. Moreover, the food security line was ₦ 17,126.72 per month, thus indicating the minimum income needed for the household to be food secured. The food security gap which measures the extent by which the respondents were below the food security line was 0.50 (50.0%), while the severity of food insecurity was 0.02 (2.0%). These outcomes differ from the findings of the study of Omolori (2017), which reported food security gap and severity of 14.0% and 8.0% respectively.

Effect of Respondents' Perception of Economic Recession on their Food Security Status: The results of the Probit regression (Table 4) show that the pseudo R square (coefficient of determination) was 0.7446, indicating that 74.5% of the variation in food security status was explained by the specified explanatory variables in the model. From the z-values of the regression coefficients, four out of the seven variables included in the model were found to be statistically significant. Household size and experience were statistically significant at 1% probability level while education and perception on recession were significant at 5% probability level. However, while farmers' experience and education were positive, household size and farmers' perception of economic recession were negative. The

implication of the negative coefficients is that as economic recession continued or deepened farmers in the study area were less food secure. Set *et al.* (2010) reached same conclusion. Similarly, increased household size decreased household food security. Amaza *et al.* (2009) established that household size influenced farmers' food security status.

The results of the marginal effect estimates, as presented in Table 5 revealed that the probability of becoming food secured by the respondents increases or decreases by the coefficients of the significant variables. The coefficients of experience and education were 0.0216 and 0.0480 respectively, implying that an increase in these variables will lead to 2.2 % and 4.8% increase in the probability of being food secure through enhanced farming experience and improvement in farmer education. On the contrary, the probability of being food secure decreases with 8.5% increase in household size and an increased negative perception of recession of about 30.3%.

CONCLUSION AND RECOMMENDATIONS

The study concluded that most of the respondents were aware of economic recession, through the extension agents and their cooperative societies. Respondents also had a strong

perception of economic recession as it affects household food security. Most households in the study area were food insecure, while perceptions of economic recession and household size, as perceived by the respondents have a significant and inverse effect on the food security and nutrition status of respondents. On the contrary, respondents' education and farming experience have positive relationship on their food security status. Against this backdrop, the study recommended that farmers in the study area should diversify their economic activities, adopt sustainable and smart coping strategies and maintain manageable household sizes in order to ameliorate the effect of the economic recession, while the State Agricultural and Mechanization Agency should make effort to extend viable, pragmatic technologies and practices, which will help reduce the effect of the recession

Table 1: Demographic characteristics of and awareness of economic recession by farmers

Variables	Frequency	%
Gender of respondents		
Female	23	25.6
Male	67	74.4
Marital status of respondents		
Single	31	34.5
Married	55	61.1
Widowed	4	4.4
Household size of respondents		
< 6	38	42.2
6-10	41	45.6
>10	11	12.2
Income of respondents		
≤ 20,000	10	11.1
20,001 -		
30,000	23	25.6
30,001 -		
40,000	28	31.1
40,000 -		
50,000	19	21.1
> 50,000	10	11.1
Awareness of Economic Recession		
Not Aware	6	6.7
Aware	84	93.3
Total	90	100
Sources of Awareness of Economic Recession		
Extension		
Agents	54	60
Cooperative	47	52.2
Friends	36	40
Relatives	20	22.2
Neighbours	11	12.2
Mass Media	6	6.7

Source: Field survey, 2017

Table 2: Farmers' perception of economic recession on food security

Perception Statements	Sum	Weighted Mean	Decision
Economic recession affects the cost of food production	335	3.72	Agreed
Economic recession cause reduction in household income	308	3.42	Agreed
Economic recession causes limited food preference	351	3.9	Agreed
Economic recession causes food scarcity	245	2.72	Disagreed
Economic recession threatens household food security	366	4.07	Agreed
Economic recession changes consumption pattern	390	4.33	Agreed
Economic recession causes adjustment in expenditure	358	3.98	Agreed

Source: Authors' computation from field data, 2017

Table 3: Food security status of respondents

Category	Frequency	%
Food secure	35	38.89
Food insecure	55	61.11
Total	90	100
Food security line/month	₦ 17,126.49/month	
Food security incidence	0.61	
Food security gap	0.5	
Severity of food insecurity	0.02	

Source: Field survey, 2017

Table 4: Probit estimates of effect of respondents' perception of economic recession on food security

Variables	Coefficients	Standard Error	z- value
Constant	-10.3251	5.9655	-1.73*
Age	-0.0507	0.0755	-0.67
Household size	-0.8669	0.2823	3.07***
Education	0.2303	0.106	2.17**
Experience	0.5109	0.1865	2.74***
Farm size	0.2935	0.4144	0.71
Perception of economic recession	-3.2245	1.3826	-2.33**
Cooperative	-0.4161	0.2845	-1.46
Pseudo R squared	0.7446		
Chi-squared	91.70***		
Log likelihood function	-15.7295		

Source: Computed from field survey, 2017; *** Significant at 1% probability level; ** Significant at 5% and * Significant at 10%.

Table 5: Marginal effects of the estimated probit model

Variables	Coefficients	z-values
Household	-0.0847	-4.10***
Education	0.0216	2.51***
Experience	0.0480	3.47***
Perception of economic recession	-0.3031	-2.68***

Source: Authors' computation from field survey data, 2017. ***
Significant at 1% probability level; ** Significant at 5% and * Significant at 10%.

REFERENCES

African Development Bank (AfDB), (2013). Agricultural Transformation Agenda Support Program - Phase 1 (ATASP-1). Strategic environmental and social assessment (SESA). Tunis, Tunisia.

African Development Bank (AfDB), (2014). AfDB gender strategy (2014–2018), AfDB, Tunis, Tunisia.

Agri, E.M., Mailafia, D. & Umejiaku, R.I. (2017). Impact of economic recession on macroeconomic stability and sustainable development in Nigeria. *Science Journal of Economics*. 2:2276-6286.

Amaza, P.S., Umeh, J. C., Helsen, J. & Adejobi, A. O. (2009). Determinants and measurement of food insecurity in Nigeria: some empirical policy guide. Contributed paper at the International Association of Agricultural Economists Conference, Gold Coast, Australia.

Bako, R.U. (2016). Econometric analysis of temporal price behaviour of local and imported rice in rural and urban markets of Niger and Lagos States, Nigeria. Unpublished Ph.D proposal presented to the Department of Agricultural Economics and Extension Technology, Federal University of Technology, Minna, Niger State, Nigeria.

Central Bank of Nigeria, (2012). Economic recession. *Understanding monetary policy series No. 14*.

Duvel, G. (1975). The mediating functions of perception in innovation decision making. *South African Journal of Agricultural Extension*, 4, 25-36.

Egwu, W. E. & Akubuilo, C.O. (2008). Food security, poverty and human development in Akubuilo, C.J.C. (ed.) chapter in book of readings in Agricultural Economics and Extension.

Food and Agriculture Organisation (FAO), (2017). State of food security and nutrition in the World 2017. Rome, Italy.

Fapohunda, T.M. (2012). The global economic recession: Impact and strategies for human resources management in Nigeria. *International Journal of Economics and Management Sciences*. 1, (6), 07-12.

Federal Ministry of Budget and National Planning, (2017). Economic recovery and growth plan, 2017-2020. Abuja, Nigeria.

Food and Agriculture Organisation (FAO), (2009). Declaration of the world food summit on food security. Rome: Food and Agriculture Organization of the United Nations.

Foster, J., Greer, J. and Thorbecke, E. (1984). A class of decomposable poverty measures. *Econometrica*, 52, (3).

Gordon, D. (1999). Hangover theory, *Mises Review* 5, (1) (Spring)

Horwitz, S. (2011). Theory, history, and the great recession. *The review of Austrian economics*, pp. 201-215.

Ogunlade, I. (2007). Backyard fish farmers' information needs in Osun State, Nigeria.

Proceedings, Africa Association of Agricultural Economists Conference held in Accra, Ghana, pp. 165-169.

Omolori, H.A. (2017). Technical efficiency and food security status of Fluted Pumpkin Farmers in selected Local

Oyewole, S. O. & Olaniyi, O.N. (2017). Business educators' perception of impact of economic recession on Nigeria's socio-Economic. *International Journal of Innovative Research in Education, Technology and Social Strategies*. 4, (1) April.

Parminter, T.G. & Wilson, J.A. (2003). Systematic interventions into biodiversity management based upon the theory of reasoned action. Proceedings of the 1st Australian Farming Systems Association Conference, p199.

Salaudeen, A. (2017). Effect of farmers' perception of economic recession on their Food security status in selected Local Government Areas of Niger State, Nigeria. Unpublished undergraduate

Government Areas of Niger State, Nigeria. Unpublished Post-graduate project presented to the Department of Agricultural Economics and Extension Technology, Federal University of Technology, Minna, Niger State, Nigeria.

project presented to the Department of Agricultural Economics and Extension Technology, Federal University of Technology, Minna, Niger State, Nigeria.

Sell, K., Zlotnik, S., Noonan, K., Rubin, D. (2010). *The effect of the recession on child well-being. The recession and food security.*, pp. 57.

Shido-Ikwu, B.S. (2017). Economic recession in Nigeria: a case for government intervention. *SSRG International Journal of Economics & Management Studies*. 4, (6), June.

United States Department of Agriculture. Food security in the United States: Measuring household food security. <http://www.ers.usda.gov/Briefing/FoodSecurity.measurement.htm>, retrieved 20th March, 2018.

