



International Journal of Development and Sustainability

Online ISSN: 2186-8662 – www.isdsnet.com/ijds

Volume 1 Number 3 (2012): Pages 701-713

ISDS Article ID: IJDS12092902



Special Issue: Development and Sustainability in Africa – Part 1

An assessment of households' vulnerability to economic shocks in south western Nigeria

A. Muhammad-Lawal *, O.A. Omotesho, F.T. Kolade

Department of Agricultural Economics and Farm Management, University of Ilorin, P.M.B. 1515, Ilorin, Nigeria

Abstract

High level of vulnerability of small-scale farmers and poor rural households to economic shocks occasioned by the economic policies of the Federal Government of Nigeria often hampers their effective participation in economic activities. Even though, social protection programmes are often advocated for reducing the vulnerability to economic shocks and stresses, lack of information of the determinants of households' vulnerability often limit the effectiveness of such programmes. This study was therefore designed to carry out an assessment of vulnerability of households to economic shocks. Data used for the study were collected from one hundred and twenty (120) households. Descriptive statistics, economic vulnerability index and multiple regression analyses were used to analyse the data. With a value of 0.703, the economic vulnerability index shows that households are about 70% vulnerable to economic shocks. The results also show that the significant variables affecting households' vulnerability to economic shocks are the gross annual income and expenditure accounting for more than 70% of households' vulnerability as indicated by the Coefficient of Multiple determination $R^2 = 0.711$. The study shows that economic vulnerability of the households is high and recommends that government should help in ensuring stabilisation in prices of commodities and provision of soft loans to households for consumption and production needs.

Keywords: Household, Economic shocks, Vulnerability index, Multiple regression, Ondo state

Copyright © 2012 by the Author(s) – Published by ISDS LLC, Japan

International Society for Development and Sustainability (ISDS)

Cite this paper as: Muhammad-Lawal, A., Omotesho, O.A. and Kolade, F.T. (2012), "An assessment of household vulnerability to economic shocks in south western Nigeria", *International Journal of Development and Sustainability*, Vol. 1 No. 3, pp. 701-713.

* Corresponding author. E-mail address: lawaz71@yahoo.com, lawalazeez@unilorin.edu.ng

1. Introduction

1.1. Background to the Study

The overriding development policy objective at the end of the decolonization process in the sub-Saharan African countries was the attainment of rapid economic growth. However, there was little concern about how the benefits of economic growth were to be distributed along different social classes in the society. The basic assumption was that as long as the Gross Domestic Product (GDP) was growing at a satisfactory pace, the trickle down process would ensure that the standard of living of the majority of the people would rise with the growth of national income (Alayande and Alayande, 2004). Even though, there is rapid economic growth and high rate of urbanisation in most of these countries in the 1960s and 1970s, the level of welfare of increasing proportions of the population in Africa, especially in the agricultural sector which is the main source of economic activity for about 60% of the population who live in the rural areas did not improve much (Adeoti and Sinh, 2009). In view of the peculiar characteristics inherent in their means of livelihood and major income source the rural households are invariably the most vulnerable to income risk (Alayande and Alayande, 2004).

The role of agriculture in poverty reduction and enhancing economic growth can hardly be over emphasised (World Bank, 2007). Ironically, small scale farmers and poor households dependent on agriculture face significant challenges in carrying out agricultural activities as a result of their vulnerability to variation in their socio-economic circumstances. Reduction in vulnerability to socioeconomic risks is required to ensure that poor people continuously engage in productive activity as well as take advantage of new opportunities (Farrington et al., 2007). There has been renewed interest and focus on issues relating to economic vulnerability. Apart from the concern about the structural features of specific groups of countries as expressed in the various United Nations meetings and resolutions, this might have been triggered by socio-political and financial crises being experienced in many developing countries particularly in Africa and Asia (Guillamont, 2007).

Having been described as the state of being open to shocks that disrupts economic life (Adeoti and Sinh, 2009), vulnerability measures the extent to which a system or units is likely to experience harm due to exposure to perturbations or stress (Sherbinin et al., 2007). The vulnerable group can therefore be thought of as consisting of four groups, namely, the permanently poor, those becoming permanently poor in the future due to some evolutionary trends, those that are likely to become poor due to risk and shocks, and those likely to become poor due to predictable events such as seasonality (Dercon, 2011).

Vulnerability broadly comprises of three main components. These according to Pelling (2003) are exposure, resistance and resilience. Exposure was described as a product of physical location and the character of the surrounding environment. Resistance on the other hand was seen as a reflection of the capacity of an individual to maintain a balance between economic, psychological and physical health conditions. Finally, resilience was described as the ability to cope with or adapt to stress. It is a reflection of the extent of planned preparation undertaken in the light of potential difficulties, and of spontaneous adjustments made in response to felt stress (Burton, et al, 1993; Pellings, 2003; Odufuwa, 2010).

Vulnerability in a general sense is an on-going dynamic concept evolving for each individual as events occur and risks responses and output change; not just a function of the environment a person lives. It is the product of risks, of the person's conditions and also of his or her actions. It represents household's or individual's exposure to a future loss due to a shock which causes the individual's well being to fall below a given socially acceptable level. Vulnerability is determined by the characteristics of the shocks and household's ability to respond to that shock. In this respect, it is clear that farmers in most developing countries are more susceptible to poverty and economic shocks such as global declining agricultural commodity prices; increasing gaps between farmer prices and consumer prices; changing patterns of food demand and changing global agricultural food system (ADB, 2005).

Vulnerability is an anticipatory measure of household's well-being (Chaudhuri, 2001). Since the poor households who are susceptible to socioeconomic, political and environmental risks usually lack buffers, reducing vulnerability to shocks among the poor is therefore necessary in poverty alleviation (Adeoti and Sinh, 2009). In view of the interrelationships between social protection programmes, agricultural growth, effective poverty reduction and food security, it is imperative that issues affecting vulnerability measures are integrated into policy and programme design and implementation (Holmes and Jones, 2011).

1.2. Statement of the Problem

In spite of the abundant human and material resources in Nigeria, incidence of poverty continues to rise each passing day. This implies that about 70% of the Nigerian population languishing in poverty is exposed to shocks that lead to a wide variability in their income. Failure to successfully stem the tide of rising incidence of poverty in Nigeria however bears a strong testimony that little attention has been paid to dynamic issues affecting the seemingly insurmountable cycle of poverty. This might have informed the decision by the policy makers to begin the incorporation of risk and vulnerability into the design of social protection programmes and poverty reduction strategies (Alayande and Alayande, 2004). While there are various studies have on measurement of the incidence, intensity and severity of poverty in Nigeria (Federal Office of Statistics, FOS, 1999; Okojie et al., 2000; Aigbokhan, 2000), there is a dearth of study on households' vulnerability to socioeconomic shocks. In line with Moser (1998), changing socio-economic status of households further makes it imperative to go beyond the static measures of poverty and assess issues of vulnerability among households.

1.3. Objectives of the study

This study was embarked upon to assess households' vulnerability to economic shocks. This is with a view to identifying the various forms of economic shocks affecting the households; evaluate the level of economic vulnerability of the households; and determine the factors affecting the households' economic vulnerability.

2. Methodology

2.1. Study area

Ondo State is one of the states created out of the old Western Region. It was originally created on 3rd February, 1976 with the State capital at Akure. Ondo State is composed of 18 Local Government Areas. The state has a land area of 14,606km² and an estimated population of 4,011,407 (Wikipedia, 2008).

Ondo state lies between longitude 4^o20' and 6^o5'E and latitude 5^o45' and 7^o52'N. The climate is of lowland tropical rain forest type, with distinct wet and dry seasons. The mean monthly temperature is 20°C with a mean monthly range of 2°C while the relative humidity is over 75% and the mean annual rainfall of the State exceeds 2000mm (Wikipedia, 2008). Due to the richness of the land of Ondo State in agricultural production, many of the inhabitants of the State are farmers. The major cash crop planted is cocoa while other cash crops and foods crops produced generally in the state include kolanut, oil palm, banana, plantain, yam, cassava and vegetables. The state is also rich in mineral resources such as petroleum and bitumen.

2.2. Sources and methods of data collection

Data used for this study include both the primary and secondary data. The primary data was collected with the aid of well structured questionnaire and open discussions, interviews and observations to complement the data for accuracy and reliability. The secondary data were obtained from journals, textbooks, internet and reports.

2.3. Sampling technique and sample size

A 3-stage random sampling technique was used. The first stage was a random selection of two LGAs out of the eighteen LGAs in the state. The second stage was the selection of six communities in each LGA used. The third stage was the random selection of ten households in each of the selected communities. This makes it a total of 120 respondents used for the study.

2.4. Method of data analysis

Data for the study were analysed using descriptive statistics, economic vulnerability index (EVI) and Linear Multiple Regression analysis.

$$\text{Economic Vulnerability Index (EVI)} = \text{Total Expenditure (Ei)} / \text{Total Income (Ii)} \quad (1)$$

Linear Multiple Regression is specified as follows:

$$Y = f(X_1, X_2, X_3, X_4, X_5, X_6, d_1, d_2, e) \quad (2)$$

Where

Y = Economics Vulnerability Index

X₁ = age (yrs)

X_2 = household size

X_3 = farm size

X_4 = annual income (₦)

X_5 = annual expenditure (₦)

X_6 = year of education

d_1 = agricultural occupation

d_2 = sex of the household head

e = error term

3. Results and discussion

This section deals with the presentation, analysis and discussion of the results based on the data collected for the study.

3.1. Demographic characteristics of the respondents

The demographic characteristics of the respondents including sex, age, marital status, religion, household size and education level were identified as presented in Table 1.

From Table 1, it can be observed that the majority of the respondents (80.83%) are males. This shows that most of the households are headed by male. This may also be due to the cultural backgrounds of the respondents which encourage male to be heads of households and place the responsibility of maintain households on them.

It can also be seen that about 60% of the respondents are within the youthful age while about 40% are in the middle age category. While about 80% of the respondents are married, majority of the households (56.30%) of the households are composed of between 5 and 10 members.

On the level of education, the study revealed that most of the respondents have heads (56%) have attained a minimum of secondary education. As such, there is high level of literacy among the respondents where only 20% lack formal education.

In view of their importance on the rural household's vulnerability, the socioeconomic characteristics of the households are determined and presented in Table 2.

As shown in Table 2, only 37.50% of the respondents are fully involved in farming activities while 10.83% of the respondents engaged in both farming and non farming activities, that is, they are at minor level of agricultural production. However, 51.67% of the respondents are not in any way involved in farming activities. This implies that the majority of the respondents (62.50%) have other sources of income other than agriculture.

Table 1. Demographic characteristics of the respondents

Demographic Characteristics	Frequency	Percentage
Sex		
Male	97	80.83
Female	23	19.17
Total	120	100
Age (Years)		
Less than 25	2	1.7
25 - 45	69	58
46 - 65	47	39.5
Above 65 years	1	0.8
Total	120	100
Marital Status		
Single	16	13.33
Married	99	82.5
Widowed	5	4.17
Total	120	100
Household Size		
Less than 5	49	41.2
5 and 10	67	56.3
Above 10	120	100
Education Level		
No formal education	24	20
Primary education	20	16.67
Secondary education	26	21.67
Tertiary education	41	34.17
Others	6	5
Total	120	100

Source: Field survey, 2008

On non agricultural sources of income for the respondents, Table 2 shows that trading and salaried job are the main sources of non agricultural income for the households with 21.67% and 23.33% of the respondents engaged in trading and salaried job respectively. However, 37.50% of them do not have any other source of income apart from agriculture. Income distribution of the respondents also reveals that households had an

average annual income of ₦659,682.79. On the other hand, the households incurred an average annual expenditure of ₦ 437,502.45.

Table 2. Socio-Economic characteristics of the households

Socioeconomic Characteristics	Frequency	Percentage
Agricultural Occupation		
Main	45	37.5
Minor	13	10.83
None	62	51.67
Total	120	100
Non Agricultural Income Sources		
Trading	26	21.67
Salaried Job	28	23.33
Tailoring	7	5.83
Carpentry	3	2.5
Bricklaying	4	3.33
Others	7	5.83
Nil	45	37.5
Total	120	100
Annual Income ₦		
<200,000	13	10.9
200,000 – 400,000	35	29.4
400,001 – 600,000	18	15.2
600,001 – 800,000	21	17.6
800,001 – 1,000,000	13	10.9
Above 1,000,000	19	16
Total	119	100
Annual Expenditure ₦		
<200,000	23	19.3
200,000 – 400,000	52	43.7
400,001 – 600,000	18	15.2
600,001 – 800,000	15	12.6
800,001 – 1,000,000	5	4.2
Above 1,000,000	6	5
Total	119	100

Source: Field survey, 2008

3.2. Exposure to shocks

This section examined the production and economic shocks to which the respondents are exposed and the coping strategies adopted. Exposure to agricultural production shocks among the respondents is as presented in Table 3.

Table 3. Exposure to agricultural production shocks

Features	Frequency	Percentage
Exposure Status:		
Exposed	45	37.5
Not Exposed	13	10.83
Not Applicable	62	51.67
Total	120	100
Types of Shock in Agriculture:		
Crop Failure	13	10.93
Pest and Diseases	20	16.67
Mortality	3	2.5
Others	9	7.5
Nil	75	62.5
Coping Mechanisms:		
Fertilizer Application	6	5
Agrochemical	23	19.17
Mixed Cropping	2	1.67
Vaccination	2	1.67
Others	5	4.17
Not Applicable	82	68.33

Source: Field survey, 2008

Table 3 shows that 37.50% of the respondents experienced production shocks in their farming activities while 10.83% of the respondents did not experience any production shocks. The main production shocks faced by the farmers include infestation by pests and diseases experienced by about 17% of the respondents. The study also shows that about other shocks experienced by the respondents in agricultural production included excessive variation in the climatic factors as well as poor marketing for agricultural commodities. The major coping strategy adopted by about 20% of the respondents was the application of agrochemicals.

In non agricultural sector, this study examined the exposure of the households to non agricultural shocks. This is as shown in Table 4.

Table 4. Exposure to non agricultural shocks

Exposure Features	Frequency	Percentage
Exposure Status:		
Exposed	106	88.33
Not Exposed	14	11.67
Total	120	100
Types of Non Agricultural Shocks		
Retirement and Banning of Goods	8	6.67
Banning of Street hawking	11	9.17
Sharp Increase in Price of Goods/dislodgement	45	37.5
Unstable Prices of Goods	20	16.67
Increase in Fuel Prices & Rent	15	12.5
Others	7	5.83
Nil	14	11.67
Total	120	100
Coping Strategies:		
Reduction of Feeding and Schooling Expenses	53	44.17
Reduction of Fuelling/ Transportation Expenses	27	22.5
Self Discipline and Taste Adjustment	16	13.33
Others	10	8.33
Nil	14	11.67
Total	120	100

Source: Field survey, 2008

Table 4 shows that about 9 out of every 10 respondents are exposed to economic shocks. The major sources of economic shocks faced by the majority of the respondents included retirement from civil service, sharp increases in price of goods and dislodgement from the market, unstable prices of goods and sharp increases in price of fuel and house rent accounting for the major shocks faced by about three-quarter of the entire respondents.

In order to cope with economic shocks, Table 3 reveals that the respondents adopt measures such as reduction in expenditure on feeding and children education, fuelling/transportation and adjustment in taste for expensive materials.

3.3. Household's vulnerability to economic shocks

This section presents the income distribution of households, their expenditure and household's Economic Vulnerability Index as presented in Table 5.

Table 5. Distribution of households according to their vulnerability to economic shocks

Economic Vulnerability Index	Frequency	Percentage
< 0.30	8	6.7
0.3000 - 0.50	15	13.5
0.5001 - 0.70	31	25.2
0.7001 - 0.90	41	34.4
> 0.90	24	20.2
Total	119	100

Source: Field Survey, 2008

As shown in Table 5, the Economic Vulnerability Indices ranging between 0.13 and 0.9010, this study reveals that the mean vulnerability index for the respondents was 0.7034. This implies that there is a high level of Economic Vulnerability Index among the respondents as they incurred as much as about 70% expenditure of their total income.

3.4. Determinants of households' economic vulnerability

This section presents the results of the Linear Multiple Regression analysis used in examining the determinants of household's vulnerability to economic shocks in the study area. The results are as presented in Table 6.

Based on highest R^2 value; highest number of significant variables; highest f-value; and number of coefficients in conformity with apriori expectation, exponential function was chosen as the lead equation for the analysis. As such by the value of R^2 , about 70% of the variation in the vulnerability indices among the respondents is due to changes in the amount of annual income and expenditure of the households. While increase in household's income reduces its vulnerability, increase in annual expenditure lead to increase in the vulnerability of the household.

4. Conclusion and recommendations

There is high incidence of vulnerability to economic shocks among the households in Ondo State, Nigeria. Income and expenditure account for about 70% of the vulnerability of the households to economic shocks. This is due to the fact that the more income is generated for households, the less vulnerable they would be to economic shocks while the more expenses a household incurs, the more vulnerable it become to economic shocks.

Table 6. Results of the regression analysis

Variables	Functional Forms			
	Linear	Semil-Log	Exponential	Double-Log
Constant	0.683	1.205	-0.485	0.297
X₁	0.001	-0.011	0.003	-0.073
	(0.001)	(0.180)	(0.003)	(0.333)
	0.857	-0.062	1.072	-0.221
X₂	0.006	0.093	0.007	0.154
	(0.004)	(0.093)	(0.08)	(0.172)
	1.498	1.002	0.891	0.895
X₃	0.001	0.019	0.001	0.030
	(0.007)	(0.036)	(0.012)	(0.067)
	0.162	0.511	0.085	0.444
X₄	-5.46E-07***	-0.303***	-1.12E-06***	-0.480**
	(0.000)	(0.089)	(0.000)	(0.165)
	-12.163	-3.395	-13.567	-2.909
X₅	7.78E-07***	0.278	1.56E-06***	0.453*
	(0.000)	(0.124)	(0.000)	(0.239)
	12.725	0.674	13.835	1.894
X₆	-0.003	-0.086	-0.002	-0.099
	(0.038)	(0.124)	(0.006)	(0.230)
	0.880	-0.674	-0.428	-0.344
d₁	-0.022	-0.076	-0.085	-0.185
	(0.038)	(0.113)	(0.070)	(0.209)
	-0.591	-0.670	-0.838	-0.885
d₂	-0.008	0.04	0.025	0.073
	(0.035)	(0.117)	(0.064)	(0.327)
	-0.230	0.025	0.394	0.223
R²	0.682	0.478	0.711	0.415
F	29.46	2.521	33.83	1.952

Source: Data analysis, 2008

***Coefficients significant at 1%

** Coefficients significant at 5%

* Coefficient significant at 10%

Based on the findings of this study, the following recommendations are made:

- i. Government should provide soft loans to the households to acquire more factors of production such as land for farmers that would enhance their income and reduce their vulnerability. The cooperatives and other financial institutions may be empowered to carry out the responsibility relating to provision of such loans;
- ii. Households should diversify their sources of income in order to edge against possible risks and shocks to their production activities and income;
- iii. To reduce households' expenditure, effort should be intensified to assist farmers by granting them access to improved variety of seeds and other subsidized inputs. This is expected to enhance the production of the farmers, earn higher income from enhanced productivity and incur lower costs in production; and
- iv. In view of its importance to households' welfare, there is the need for stability in the price of petroleum products.

References

- ADB (2005), "Agricultural Commercialization, Value Chains and Poverty Reduction" Discussion Paper No. 7. ADB Hanoi.
- Adeoti, J.O. and B.T. Sinh (2009), "Technological Constraint and Farmers' Vulnerability in Selected Developing Countries (Nigeria and Vietnam)", Paper presented at the 7th International Conference, 6-8 October 2009, Dakar, Senegal.
- Aigbokhan, B. E. (2000), "Poverty, Growth and Inequality in Nigeria: a Case study", Research Paper 102, African Economic Research Consortium, Nairobi, Kenya.
- Alayande, B. and Alayande, O. (2004), "A Quantitative And Qualitative Assessment Of Vulnerability to Poverty In Nigeria", Paper submitted for presentation of CSAE Conference on Poverty reduction, Growth and Human Development in Africa, March, 2004.
- Burton, I., Kantes, R.W. and White, G.F. (Eds). 1993. *The Environment as Hazard*, Guilford Press, London, p. 290.
- Chaudhuri, S. (2001), "Reconceptualizing Poverty Assessments to take Account of Vulnerability", Paper presented at the workshop on Poverty and Vulnerability, 3rd Asia Development Forum Bangkok, June.
- Dercon, S. (2011), "Vulnerability to Poverty: Is Quantitative Measurement for Policy Analysis Possible?", Available at <http://www.economics.ox.ac.uk/members/stefan.dercon/26/10/2007>.
- Farrington, J., Holmes, R. and Slater, R. (2007), "Linking social protection and the productive sectors", ODI Briefing Paper 28, London.
- Federal Office of Statistics (1999), *Poverty Profile for Nigeria*, Federal Office of Statistics, Lagos, Nigeria. World Bank. 2007. World Development Report 2008: Agriculture for development. Washington DC.

- Guillamont, P. (2007), “Assessing the Economic Vulnerability of Small Island Developing States and the Least Developed Countries”, United Nations University – World Institute for Development Economics Research (UNU-WIDER) Research Paper No. 2007/40.
- Holmes R. and Jones, N. (2011), “Gender Inequality, Risk and Vulnerability in the Rural Economy Refocusing the Public Works Agenda to Take Account of Economic and Social Risks”, ESA Working Paper No. 11-13. Agricultural Development Economics Division Food and Agriculture Organization of the United Nations.
- Moser, C. (1998), “The asset Vulnerability framework: Reassessing the Urban Poverty Reduction Strategies”, *World Development*, Vol. 26 No.1, pp. 1-19.
- Odufuwa, B.O. (2010), “Vulnerability and Mobility Stress Coping Measures of the Aged in a Developing City” *European Journal of Social Sciences*, Vol.13, No. 1. pp: 25 -33. Available at http://www.eurojournals.com/ejss_13_1_03.pdf.
- Okojie, C. Ogwumike, F. O., Anyawu, J. C. and Alayande, B. A. (2000), “Poverty in Nigeria: Analysis of gender dimension, Access to Social Services and Labour Market” Final report submitted to the African Economic Research Consortium (AERC), Nairobi, Kenya.
- Pelling, M. (2003), *The Vulnerability of Cities: Natural Disasters and Social Resilience*, Earthscan, UK.
- Sherbinin, A. Schiller, A. and Pulsipher, A. (2007), “The Vulnerability of Global Cities to Climate Hazards”, *Environment and Urbanization*, Vol.19 No.1, pp. 39-64.
- Siyanbola, T., Olasupo, A., Adebayo, A., Isola, W., Lawanson, O. and Quadri, O. (2005), “Protecting the Poor from Macroeconomic Shocks in Nigeria: An Empirical Investigation and Policy Options” A study commissioned by Global Development Network under the auspices of an International Project on Macroeconomic Policy Challenges of Low Income Countries. Retrieved on 29th June, 2012 from http://depot.gdnet.org/gdnshare/pdf2/gdn_library/global_research_projects/macro_low_income/Tomori.pdf.
- World Bank (2007) World Development Report 2008: Agriculture for development. Available at <http://siteresources.worldbank.org/INTWDR2008/Resources/2795087-1192111580172/WDROver2008-ENG.pdf>.
- Washington DC Wikipedia (2008). “Ondo State” available at <http://en.wikipedia.org/wiki/ondostate>.