THE EFFECT OF SHOCKS ON HOUSEHOLD CONSUMPTION IN RURAL NIGERIA

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ABSTRACT

This paper examines the impact of both exogenous idiosyncratic and covariate shock events on the consumption of farm households in rural Nigeria by using an ordinary least square method. The result of the overall sample shows that whilst idiosyncratic and climatic shock have no significant effect on household consumption, price shocks are having a significant negative impact on household consumer. By disaggregating the sample into poor and non-poor households the result suggests that that the non-poor households are able to adequately insure against the effect of idiosyncratic shocks as well as the climatic shock on their consumption while the poorer ones had not been able to insure against the effect of shocks related to death, livestock loss, climate change and price changes on their consumption. This suggests that the farm households should be provided with an adequate and effective social protection measures that would mitigate the effect of shocks on their welfare.

JEL Classifications: O15; I32; D13; Q12
Keywords: Shocks; Household Consumption; Farm Household; Rural Nigeria
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INTRODUCTION
The predominance of farm households in rural areas of developing countries are vulnerable to poverty as a result of the frequent occurrence of climatic shocks and their limited access to formal coping mechanisms. The ability of a household to cope with the adverse effect of shocks has been a topical issue of increasing concern and debate in the literature. The World Bank in its World Development Report has outlined shocks and its effects on welfare as one of the social protection issues that need to be addressed in less developed countries in order to tackle poverty in the region (World Bank, 2000). The Shock events are naturally beyond the control of an individual human being and usually emerged in the case of sudden reaction against an exogenous event. A shock event may either be idiosyncratic or covariate. Idiosyncratic shocks are shocks related to illness or death of a household member, which affects only an individual household. While, covariate shocks like a natural disaster or adverse weather conditions impinge an impact on a larger group of population in the same area at the same time. The extent to which shock affects household wellbeing depends on its severity, its frequency, and the mechanisms available to household to cushion its impact on their wellbeing (Townsend, 1995).

A large body of literature has focused on the effects of shocks on household consumption (Townsend 1995; Ravallion and Chaudhuri, 1997; Dercon, 2004; 2005; Dercon and Krishnan, 2000; Tongruksawattana et al., 2010). Yet, little is known about the impact of shocks on household consumption in developing countries. Tongruksawattana et al. (2010) reveal that the current gap in the literature is due to lack of comprehensive micro level household data on shocks in developing countries. Hence, an understanding of the consequences of shocks and ways to cope with the adverse effect of shocks on household wellbeing is the first step in establishing an effective social protection programmes that will reduce the adverse effect of shocks on household consumption and ensure the eradication of poverty in the region (Dearcon, 2004). The shocks that are idiosyncratic in nature can be fully insured, within the rural community through transfers from other individuals not affected by shocks. But, Covariate ones cannot be insured within the community as it affects the entire population at the same time. In such cases, households have to rely on transfers from outside the community, e.g. remittances sent by migrants, government assistance to smooth their consumption (Townsend, 1994; Murdoch, 1995).
This paper aims to make contribution to the growing literature on the impact of shocks on household wellbeing by using the recent nationally representative household survey of rural Nigeria to empirically examine the impact of both idiosyncratic and covariate shocks on household consumption expenditure of an aggregated sample of poor and non-poor households with a view to identify the vulnerable households and also to recommend possible social protection measures. Per adult equivalent household consumption expenditure is used as a measure of household consumption, which serves as a proxy measure of household welfare. In contrast to the existing studies that uses discrete variable as a measure of micro shock, this study uses the historical information of the number of times that the household has experienced a given shock in the last 5 as a continuous measure of shock. To account for the effects of shock events on household consumption the study employed ordinary least square estimation technique, which is deemed more appropriate because shock events are by nature exogenous events.

The rest of the paper is organized as follows: Section 2 provides an extended discussion on the impact of shocks and household wellbeing in Nigeria. Section 3 presents conceptual framework, and methods of estimation. Section four discusses the source of the data and how the variables of the study were measured. Section 5 discusses the empirical findings, while section 5 concludes.

SHOCKS AND HOUSEHOLD WELLBEING IN RURAL NIGERIA

Nigeria provides an interesting context to examine the impact of shocks on household wellbeing as the predominance of its rural population are farm households that are naturally prone to various forms of ecological, environmental and economic shocks that increases their vulnerability to poverty. Alayande and Alayande (2004) maintain that higher incidence of poverty profile in rural Nigeria has been traced to environmental hazards associated with agricultural production, high vulnerability to health hazards, high fertility rate, lack of access to improved seeds and inputs and poorly developed social infrastructural facilities among others. The adverse effect of shocks in the country is not affecting the lives of only farm households; it also affects the lives of other people in the rural communities because they all depend on the agricultural sector as the means of sustaining their livelihood.

In the absence of functioning formal insurance and credit markets in Nigeria as in other developing countries, the rural households tend to adopt an informal measures to cushion the adverse effect of shocks on their wellbeing. There are households that manage risks ex-ante through non-farm diversification, which implies that households mitigates the adverse effects of shock before it actually occur by choosing income portfolios that have low positive correlation with farm income. Ellis (2000) reaffirms that non-farm diversification is often a strategy that farm households use to moderate seasonal income variability and minimize the inherent risks associated with agriculture in developing countries. Alternatively, other households in the country mitigate shocks ex-post by selling their livestock as soon as the shock event occurred in order to meet up the consumption needs of their household, thus the victims of shocks that sell their assets will remain in perpetual poverty.

In this regard, Oyekale and Yusuf (2010) reveal that the main shock experienced by the rural household in rural Nigeria is high prices of agricultural inputs and most of the rural household that experience such shocks usually sell year livestock to cope with the adverse effect of the shock on their consumption. Similarly, Alayande (2004) reveal that rural poverty is often worsened in the country as most of the rural households that have experienced drought, degraded land, input shortages, disease outbreak and low prices for agricultural products dispose their productive assets such as land, livestock and equipment in order to meet immediate consumption needs of their household. However, there are poor farm households that don’t possess the necessary assets to cushion the effects of shocks on their wellbeing. Such households may be forced to resort to survival strategies involving debt, adjustment in food intake, sale of goods or removing children from formal schools, which worsen their vulnerability to poverty in the future (Olawuyi et al., 2011).

Evidence from other sub-Saharan African countries suggests that rural households also employed various forms of strategies in order to cope with the adverse effect of shocks on their wellbeing. Devereux (2008) points out that rural households who experienced shocks such as flooding, drought, bush fire and loss of animal in Ghana may no longer interested in engaging in only agriculture, as such they have to diversify into non-farm activities in their struggle to survive. Similarly, Webb and Reardon (1992) in their study of one of the sub-Saharan African countries Burkina Faso reveal that household’s capacity to cope with the drought of the mid-1980s were strongly associated with the extent of their diversification into non-farm activities. The impact of shocks may thus go beyond the transitory reduction of income and decline of household wellbeing; it may also result to structural transition to abject poverty (Bezu and Barret, 2012). To reaffirm this assertion, Paxson (1993) reveals that variability in agricultural...
incomes as a result of shocks can lead to significant changes in consumption and welfare losses, particularly if the household savings behavior does not offset the fluctuations in income.

CONCEPTUAL FRAMEWORK AND METHODOLOGY

Conceptual Framework

The framework for this study is developed from Permanent income hypothesis developed by Milton Friedman's (1957). Permanent income hypothesis postulates that any transitory changes in income will not have no any effect on permanent income and hence on actual consumption. The theory has been widely used in the literature to empirically explore how shocks affect household consumption in developing countries (Dearton, 1992; Townsend, 1994). To test the implication of permanent income hypothesis on household consumption, the household utility function is specified as

\[ U = EU(C) \]  

Where:

- \( U \) denotes expected utility function and \( C \) is the level of household consumption. By substituting utility with expected utility it implies that uncertainty has been incorporated into the model and the aim of each rational household is to maximise the sum of expected utility, constrained by the sum of initial assets, and the value of their future savings/exogenous income over their lifetime. The theory assumed that each household can save or borrow money at a given rate of interest to meet the consumption expenditure of his household with the condition that he has to pay the money before the end of his lifetime. Assuming, the interest rate is equal to zero the household budget constraint is specified as

\[ C_t \leq A_0 + Y_t \]  

each household satisfies the budget constraint with equality since the marginal utility of consumption is always positive. Thus, the langragian function of the utility maximization of each household is

\[ L = U(C_t + \gamma(A_0 + Y_t - C_t)) \]  

Taking the first order condition for utility maximization function respect to \( C_t \)

\[ \frac{dU}{dC_t} = \gamma \]  

This implies that the marginal utility is constant over time, thus shocks that do not affect permanent income should not affect consumption. In case of shock event, the households would 'smooth' away the effect of shocks on household consumption by using their available resources. The household may sell their livestock, use their savings, borrow from others, or migrate to areas not affected by shocks rather than reducing household consumption. However, shocks that affect permanent income, such as loss of productive assets should have a significant impact on household consumption. The theoretical insights of permanent income hypothesis provides a framework upon which to empirically explore how idiosyncratic and covariate shocks affect household consumption in rural Nigeria.

Method of Modelling the Impact of Shocks on Household Consumption

The study employs a general model of consumption based on the permanent income hypothesis framework specified above to empirically examine the impact of shocks on household consumption. Following Dearcon (2001), the log of consumption is regressed on vectors of variables that capture idiosyncratic shocks, covariate shocks and household characteristics that are likely to affect household consumption.

\[ \ln C_i = \beta_0 + \beta_1 IS_i + \beta_2 CS_i + \beta_3 Z_i + \beta_4 CL_i + e_i \]  

where:

\( \ln C_i \) denotes per adult equivalent household consumption expenditure, which serve as a measure of household economic wellbeing. Deaton and Grosh (2000) pointed out that consumption is the best measure of household economic wellbeing because it is usually measured with less error than household income, and the households seek to stabilize their consumption over time. To avoid a downward bias in the estimated effect of health shocks on household economic wellbeing all expenditures on health are excluded from the consumption expenditure.

\( IS_i \) denotes idiosyncratic shocks experienced by household \( i \) that are directly observed in the survey. They basically comprise of shocks related to the death of an adult working member of the household or someone who sends remittances to the household; illness of the income earning member of the household; loss of physical assets such as land property; and death of livestock due to illness.
\( CS_i \) represents the array of covariate shocks experienced by household \( i \), which include climatic and economic shocks. Climatic shocks comprise of drought and flooding; while price shocks are shocks that household experienced due to increase in prices of agricultural inputs, decrease in the price agricultural output, decline in the demand of farm output or increase in the price of food items.

\( Z_h \) represents the characteristics of household head that may influence household economic wellbeing, such characteristic include gender, age and years of schooling of the household head.

\( H_e \) captures the endowments of the household \( i \), which includes the composition of the household, the size of the household farm and monetary value of the household livestock. The household endowments measure the level of household productive capacity and it also served as a proxy of permanent income.

\( CL_c \) denotes community level characteristics, such variables include communal access to electricity; roads; mobile phone services; and geographical location of the household.

The potential endogeneity issues related to the shock variables in the model have been avoided through the use of external shock information experienced by the household as opposed to self-reported measures of shocks. An explicit description of the community characteristics and geographical location of the respondent in the model control for unobserved locational effects as this may cause an underestimation of the full effect of covariate shocks on household economic wellbeing. Furthermore, a comprehensive description of the household characteristics (\( Z_h \)) reduces the likelihood of potential bias due to unobserved household heterogeneity.

**DATA AND MEASUREMENT OF VARIABLES**

**Source of Data**

The data for this paper are obtained from the first wave of nationally representative survey of Nigerian panel rural households carried out by the Nigerian National Bureau of Statistics in collaboration with the World Bank in 2010/2011. The survey is designed to capture one major cropping season. In the survey, the households were asked about the type of shocks they had experienced in the last five years, indicating the frequency and severity of the shock and the type of coping strategy they have used to cope with the adverse effect of the shocks on their consumption. The survey also generates information on consumption, household endowments, community infrastructures and other issues related to household wellbeing. The projected sample size was 3380 rural households. But the study used only the sample of farm households, which accounts for 3257 observations.

**Measurement of Variables**

Information on frequency of times that a household experienced a given type of shock in the past five years were used to measure the shock variables. In the survey, the household heads were asked the number of times they have experienced a given shock event in the past five years. Based on household responses, we construct a continuous variable for each category of shock. The Idiosyncratic shocks captured in the survey include shocks related to the death of an adult working member of the household or someone who sends remittances to the household; illness of the income earning member of the household; loss of physical assets such as land and property; and the death of livestock due to illness. While, the covariate shocks comprise of climatic and economic shocks. The climatic shocks include drought and flooding, whereas economic shocks are related to increases in the price of agricultural inputs, decrease in the price agricultural output, and decline in the demand of farm output and increase in the price of food items. The information on these six categories of shocks obtained from the survey allows us to evaluate objectively how idiosyncratic and covariate shocks influenced household consumption in rural Nigeria.

Household characteristics are measured by the gender, age and educational qualification of the household head; followed by farm size, household access to social and financial capital. Sex is coded as a dummy variable with a value one for male headed household and zero otherwise. The age of household head is measured in years. Education is measured in terms of the years of formal education of adult members of the household. Finally Locational characteristic is measured as a dummy with a value one if the household is residing in northern Nigeria, zero otherwise.

**RESULTS AND DISCUSSIONS**

**Descriptive Statistics**
Table 1 presents the summary statistics of the variables used in the model, distinguishing poor and non-poor households in the sample. The poverty status of the household is ascertained on the basis of the world absolute poverty line of $1.25 dollar per day deflated by 2010 consumer’s price index. This gives a total of $457 dollars per annum, which is equivalent to NGN 71,292. Households having less than NGN 71,292 of the per adult equivalent annual consumption expenditure are classified to be poor, while those having more than the threshold value are considered as non-poor households. On this basis, the result indicates that about 65% of the households are poor and 35% are non-poor in the sample.

The descriptive statistics suggest that there is a high prevalence of shocks among the rural households in the country and there are no much significant difference between shocks reported by the poor and non-poor households in the sample. Price shock represents the most frequently occurring shock reported in the survey, where about 18% of the households experienced economic shock that is captured by the fluctuations in the prices of agricultural products. About one-fifth of the sample households also experienced illness of at least one of its income earning members in the past five years.

In line with the descriptive statistics, the characteristics of the households differ by their poverty status. The proportion of non-poor household heads that are younger and educated is higher than that of the poor households. Non-poor households are also having higher physical, social and financial capital holding (land, membership of associations and access to formal credit) than their poor counterpart. The non-poor households tend to have smaller and manageable family size than the poor households. The descriptive statistics also suggest that the incidence of poverty in the country is higher among the rural households residing in the northern region compared to their southern region. The potential consequences of heterokedasticity in the model is solved by using Huber-White heterokedasticity robust estimator instead of conventional standard errors for all the parameters, which tends to give valid standard errors, t-statistics and F-statistics.

### Table 4.1 Descriptive Statistics

<table>
<thead>
<tr>
<th>Variable Description</th>
<th>All Households</th>
<th>Non-poor Households (35%)</th>
<th>Poor Households (65%)</th>
<th>T-test (Means Difference)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Measure</td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
</tr>
<tr>
<td>Per adult equivalent</td>
<td>HH Consumption</td>
<td>N(0000)</td>
<td>70890</td>
<td>66998</td>
</tr>
<tr>
<td><strong>Idiosyncratic Shocks</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Death Shock</td>
<td>Count</td>
<td>0.11</td>
<td>0.32</td>
<td>0.10</td>
</tr>
<tr>
<td>Health Shock</td>
<td>Count</td>
<td>0.17</td>
<td>0.28</td>
<td>0.16</td>
</tr>
<tr>
<td>Physical asset shock</td>
<td>Count</td>
<td>0.01</td>
<td>0.11</td>
<td>0.01</td>
</tr>
<tr>
<td>Livestock Shock</td>
<td>Count</td>
<td>0.11</td>
<td>0.19</td>
<td>0.14</td>
</tr>
<tr>
<td><strong>Covariate Shocks</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Climatic Shock</td>
<td>Count</td>
<td>0.13</td>
<td>0.33</td>
<td>0.11</td>
</tr>
<tr>
<td>Economic Shock</td>
<td>Count</td>
<td>0.18</td>
<td>0.39</td>
<td>0.09</td>
</tr>
<tr>
<td><strong>Household Characteristics</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female Headedness</td>
<td>1/0</td>
<td>0.86</td>
<td>0.33</td>
<td>0.81</td>
</tr>
<tr>
<td>Age of Head</td>
<td>Years</td>
<td>49.87</td>
<td>15.25</td>
<td>49.54</td>
</tr>
<tr>
<td>Age of Head Square</td>
<td>Years</td>
<td>2720</td>
<td>1634</td>
<td>2699</td>
</tr>
<tr>
<td>Education</td>
<td>Years</td>
<td>3.40</td>
<td>3.72</td>
<td>5.10</td>
</tr>
<tr>
<td>Adults (%)</td>
<td>Years</td>
<td>0.61</td>
<td>0.16</td>
<td>0.59</td>
</tr>
<tr>
<td>Dependents (%)</td>
<td>Years</td>
<td>0.39</td>
<td>0.11</td>
<td>0.41</td>
</tr>
<tr>
<td>Farm Size</td>
<td>Hectares</td>
<td>1.65</td>
<td>1.18</td>
<td>1.58</td>
</tr>
<tr>
<td>Formal Credit (%)</td>
<td>Count</td>
<td>0.08</td>
<td>0.18</td>
<td>0.13</td>
</tr>
<tr>
<td>Social Capital (%)</td>
<td>Count</td>
<td>0.05</td>
<td>0.16</td>
<td>0.09</td>
</tr>
<tr>
<td><strong>Regional location</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>North</td>
<td>1/0</td>
<td>0.58</td>
<td>0.49</td>
<td>0.47</td>
</tr>
</tbody>
</table>

Note: Households are desegregated into poor and non-poor households on the basis of international World absolute poverty line measurement of USD 1.25 per day deflated by 2010 Consumer’s Price Index.
Household consumption expenditure is in Naira (NGN), Exchange Rate NGN156 per USD1

*, **, *** denote 10%, 5% and 1% significance levels.

**Table 1** presents the summary statistics of the variables used in the model, distinguishing poor and non-poor households in the sample. The poverty status of the household is ascertained on the basis of the world absolute poverty line of $1.25 dollar per day deflated by 2010 consumer’s price index. This gives a total of $457 dollars per annum, which is equivalent to NGN 71,292. Households having less than NGN 71,292 of the per adult equivalent annual consumption expenditure are classified to be poor, while those having more than the threshold value are considered as non-poor households. On this basis, the result indicates that about 65% of the households are poor and 35% are non-poor in the sample.

The descriptive statistics suggest that there is a high prevalence of shocks among the rural households in the country and there are no much significant difference between shocks reported by the poor and non-poor households in the sample. Price shock represents the most frequently occurring shock reported in the survey, where about 18% of the households experienced economic shock that is captured by the fluctuations in the prices of agricultural products. About one-fifth of the sample households also experienced illness of at least one of its income earning members in the past five years.

In line with the descriptive statistics, the characteristics of the households differ by their poverty status. The proportion of non-poor household heads that are younger and educated is higher than that of the poor households. Non-poor households are also having higher physical, social and financial capital holding (land, membership of associations and access to formal credit) than their poor counterpart. The non-poor households tend to have smaller and manageable family size than the poor households. The descriptive statistics also suggest that the incidence of poverty in the country is higher among the rural households residing in the northern region compared to their southern region. The potential consequences of heterokedasticity in the model is solved by using Huber-White heterokedasticity robust estimator instead of conventional standard errors for all the parameters, which tends to give valid standard errors, t-statistics and F-statistics.
Impact of Shocks on Household Consumption

The regression result of the full sample presented in the column 1 of Table 4.2 shows that there is an evidence of mutual insurance against the effects of idiosyncratic shock events on household consumption. The study found that the coefficient of all the idiosyncratic shock, which comprises of death, illness, loss of physical asset and livestock are not significantly different from zero. This indicates that the households have fully insured against the effects of such shocks on their consumption. Regarding covariate shocks, the finding reveals that climatic shock, which comprises of flooding and draught are well insured and they have no significant influence on household consumption. However, economic shock is not quite insured, the result indicates that economic shock reduces per adult equivalent household consumption expenditure by 32%. This portrays the covariate nature of economic shock, implying that in case of such event it is difficult to get assistance and aids from friends and relatives to smooth consumption as it affects all the people in the community at the same time.

When we disaggregate the sample by poverty status, the findings differ slightly from that of the whole sample. The result indicates that the non-poor households have fully insured against the adverse effect of all forms of idiosyncratic shocks as well as climatic shock on their consumption. However, they could not cope with price shock, a decrease in the prices of agricultural products by 1% decreases their per adult equivalent household consumption expenditure by 19%. In contrast, the result suggests that the non-poor households were unable to cope with idiosyncratic shocks related to death, livestock loss as well as covariate shocks caused by changes in climate and fluctuation in prices. A death of the income generating member of the household as well as household’s livestock reduces per adult equivalent consumption expenditure by 25% and 8% respectively. This portrays the importance of income generating members and livestock in influencing the welfare of the households in rural areas of developing countries.

Table 4.2 OLS Estimates of the impact of Shocks on Household Consumption
Dependent variable: Log of Per Adult Equivalent Consumption Expenditure

<table>
<thead>
<tr>
<th>Variables</th>
<th>All Households</th>
<th>Non-poor Households</th>
<th>Poor Households</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient</td>
<td>Coefficient</td>
<td>Coefficient</td>
</tr>
<tr>
<td>Idiosyncratic Shocks</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Death Shock</td>
<td>-0.12</td>
<td>-0.01</td>
<td>-0.25***</td>
</tr>
<tr>
<td>(0.08)</td>
<td>(0.05)</td>
<td>(0.09)</td>
<td></td>
</tr>
<tr>
<td>Health Shock</td>
<td>-0.18</td>
<td>-0.02</td>
<td>-0.04</td>
</tr>
<tr>
<td>(0.16)</td>
<td>(0.08)</td>
<td>(0.07)</td>
<td></td>
</tr>
<tr>
<td>Physical Asset Shock</td>
<td>-0.11</td>
<td>-0.04</td>
<td>-0.07</td>
</tr>
<tr>
<td>(0.06)</td>
<td>(0.07)</td>
<td>(0.02)</td>
<td></td>
</tr>
<tr>
<td>Livestock Shock</td>
<td>-0.12</td>
<td>-0.06</td>
<td>-0.08***</td>
</tr>
<tr>
<td>(0.08)</td>
<td>(0.18)</td>
<td>(0.04)</td>
<td></td>
</tr>
<tr>
<td>Covariate Shocks</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Climatic Shock</td>
<td>-0.06</td>
<td>-0.03</td>
<td>-0.04**</td>
</tr>
<tr>
<td>(0.04)</td>
<td>(0.07)</td>
<td>(0.02)</td>
<td></td>
</tr>
<tr>
<td>Economic Shock</td>
<td>-0.32***</td>
<td>-0.19***</td>
<td>-0.24**</td>
</tr>
<tr>
<td>(0.10)</td>
<td>(0.06)</td>
<td>(0.12)</td>
<td></td>
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<tr>
<td>Household Characteristics</td>
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<tr>
<td>Male Headedness</td>
<td>0.06</td>
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<td>0.01</td>
</tr>
<tr>
<td>(0.05)</td>
<td>(0.03)</td>
<td>(0.04)</td>
<td></td>
</tr>
<tr>
<td>Head Age</td>
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<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td></td>
</tr>
<tr>
<td>Head Age square</td>
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<td>0.01</td>
<td>-0.01</td>
</tr>
<tr>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>0.22***</td>
<td>0.23***</td>
<td>0.13***</td>
</tr>
<tr>
<td>(0.05)</td>
<td>(0.06)</td>
<td>(0.07)</td>
<td></td>
</tr>
<tr>
<td>Adults</td>
<td>0.03***</td>
<td>0.03***</td>
<td>0.01</td>
</tr>
<tr>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td></td>
</tr>
<tr>
<td>Dependents</td>
<td>-0.12***</td>
<td>-0.03***</td>
<td>-0.03***</td>
</tr>
<tr>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td></td>
</tr>
<tr>
<td>Farm size</td>
<td>0.02***</td>
<td>0.04**</td>
<td>0.02**</td>
</tr>
<tr>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.01)</td>
<td></td>
</tr>
</tbody>
</table>
Formal Credit

0.03***
(0.01)

0.02***
(0.01)

0.03*
(0.02)

Social capital

0.02**
(0.01)

0.02**
(0.01)

0.02**
(0.01)

Regional Location

Northern Nigeria

-0.03
(0.02)

-0.04**
(0.02)

-0.06**
(0.03)

Observations

3257
(0.02)

1150
(0.02)

2107
(0.03)

F- test

57.14***
(0.02)

12.59***
(0.02)

8.36**
(0.03)

Adjusted R^2

0.29
(0.01)

0.21
(0.01)

0.11
(0.01)


Notes: Households are desegregated into poor and non-poor households on the basis of international World Bank absolute poverty line measurement of USD 1.25 per day deflated by 2010 Consumer’s Price Index.

*, ** and *** denotes 10%, 5% and 1% levels of significance respectively.

Values in Parenthesis represent Robust Standard Error.

The result also indicates the inability of the poor households to possess the necessary assets or collateral needed to collect loans from formal institutions for diversification into non-farm businesses, which contributes to increase in vulnerability of the poor households to income shocks, which may result in perpetual living in abject poverty. Regarding covariate shocks, the result shows that climatic and economic shock decreases per adult equivalent consumption expenditure by 2% and 24% respectively. This indicates that the effect of economic shock on household wellbeing is more covariate and higher than that climatic shock. The negative effect of economic shock for both the poor and non-poor households indicates the ineffectiveness of macroeconomic policies in improving the welfare of the households.

The result of control variables in the model shows that education, composition of the household size, farm size, financial capital, social capital and regional location have a significant effect on per adult equivalent household consumption expenditure irrespective of their poverty status. Adult education is having a positive significant impact on per adult equivalent household consumption expenditure. This may imply the importance of human capital as well as the likelihood of the educated households to diversify into non-farm wage employment so as to insure against the effect of shocks on their household consumption. The coefficient of share of adult household members tends to have a positive significant effect on per adult consumption expenditure of the non-poor households while share of dependents is having a negative effect on consumption expenditure of both the poor and non-poor households.

Both social and financial capital are having positive significant impact on per adult consumption expenditure of all the households. This shows the importance of social networking and formal capital to the improvement in the welfare of the farm households in the rural areas of developing countries. With respect to location, the estimates of regional location suggest that Northern region has a significant negative impact on the consumption expenditure of the households. This confirms the wide gap of resource endowments between the North and Southern Nigeria.

Conclusion

The nationally representative data on farm households from rural Nigeria was used to examine the effect of both idiosyncratic and covariate shocks on their per adult equivalent consumption expenditure. In contrast to the existing studies, the study disaggregates the sample into poor and non-poor households and found that the non-poor households are able to adequately insure against the effect of idiosyncratic shocks as well as climatic shock on their consumption while the poorer ones had not been able to insure against the effect of shocks related to death, livestock loss, climate change and price changes on their consumption. However, in spite of the evidence of certain level of consumption smoothing among both the poor and non-poor households, there is likelihood that the informal coping mechanism used by the households to cope with the adverse effect of shocks on their consumption, like selling assets, borrowing or receiving transfers and remittances would make them vulnerable to poverty and there is possibility that the measures could break down when the economy is depressed in the case of covariate shocks. As such, the government should provide the farm households with an accessible agricultural marketing board and improved agricultural inputs at subsidised rate to ensure relative stability of the rural economy. It should also
introduce programmes such as, safety net programme, effective insurance scheme, irrigation schemes and storage facilities for dry produce, to protect the households from falling below the subsistence levels due to adverse effects of shocks on their welfare. However, further study is still needed on the the empirical evidence of the adopted informal coping strategies and vulnerability to poverty in rural Nigeria.

REFERENCES


