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Determinants of Non-farm Activities Among Rural Households in Nigeria

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Abstract

Due to the failure of the agricultural sector to occupy its rightful place in the Nigerian economy and its increase inability to provide the needed livelihoods to the rural households, the smallholder farmers adopt to diversify their portfolios away from agriculture. Non-farm activities have become the most important aspect of livelihood strategies among rural households in most developing countries Nigeria inclusive. This study assessed the determinants of non-farm income diversification among rural households in Nigeria using the General Household Survey- Panel Data of 3372 rural households. Age, Gender, marital status, distance to community centres, access to remittances, livestock value, education were among the variables that have statistically significant relationship with non-farm diversification at different levels. Policies directed towards improving rural infrastructure and credit availability to rural households were recommended to encourage investment in the rural non-farm sector.

Key words: Non-farm sector, Determinants, Rural households, Rural infrastructure

Introduction

Agriculture is still the second most important sub-sector the Nigerian economy next only to petroleum, it employs between 70 to 80 percent of the rural population. Although of central importance, farming on its own is increasingly unable to provide a sufficient means of survival in rural areas (OID 1999; Ellis, 1999; Ellis and Biggs, 2001). Therefore, it is becoming increasingly difficult to ignore the importance of income diversification away from agriculture to the livelihoods of rural households in Nigeria. Scholars contend that, solution to food insecurity lies exclusively on improving the performance of agriculture through the adoption of science and technologies. Some development economics believed that, hunger and food insecurity are beyond the realms of agriculture, but rather linked the issue to tackling poverty through generating enough income to access food since the world has enough stock for all people. It is a common believe that, producing more food may not necessarily alleviate hunger due to the fact that, access to food depends to a large extent on the financial ability of the nation or household to access the food. DFID (2004) viewed agricultural productivity three dimensions: First direct impact on the income of smallholder farmers; secondly in terms of increasing the rural employment and rural wage, including those of non-farm economy and thirdly, wider influence poverty reduction and economic growth.

Many literatures suggest that, there is a strong, positive, but non-linear relationship between per capita calorie intake and household income after controlling for household and demographic variables (Subramanian and Deaton, 1996). While on the contrary, Maxwell and Frankenber (1992) reported the linkage between income and calorie intake to be weak, as such increase in income through non-farm diversification will not substantially improve calorie intake. To the first scholar, increase in income because of participation in non-farm activities is expected to reduce food insecurity among rural households (Alderman, 1986). Many studies reported that, per capita calorie intake among farming households in rural Nigeria to be below the FAO 2500 kcal standard daily minimum recommended level (Alderman, 1986; Babatunde, *et al.*, 2010).

Diversification of income sources is becoming an important means of rising rural household's income and cushioning the effects of the risk associated with environmental and climatic changes. It is equally use to mitigate the adverse effects caused by changes in government policies and market related problems such as price, input prices increase and other shocks. Diversification into non-farm activities has recorded a tremendous increase in importance in many developing countries including Nigeria in the past two decades with the share in the total household income ranging from 30 percent and 50 percent (Adewunmi, *et al.*, 2011). Specifically, NBS (2011) reported that 62 percent of the rural households have at least someone in the household running at least one business. The diversification is seen as not only for consumption smoothing but as a strategy to deal with different shocks. Different aspects of diversification including its patterns and determinants were fully documented in the literature, where over 62 percent of rural households in Nigeria have a diversified portfolios and deriving between 30 to 50 percent of their income from non-farm sector.

Going by the above statistics, diversification into the non-farm activities of farming households in Nigeria is critical and vital to the general wellbeing of rural dwellers in Nigeria. This research is worth doing to expand the existing narrow frontier of knowledge in this field. This study tries to disproof the assumption that farm outcome growth is sufficient for achieving food security. Therefore, this study examines more closely the impact of non-farm diversification on the food consumption expenditure and food security of rural households in Nigeria using the 2010 GHS-Panel data set.

Methodology

Data Source

Data from the general household survey was conducted in 2010-2011 by the National Bureau of statistics (NBS) in Nigeria were used in this study. The General Household Survey-panel (GHS-Panel) is the first round of its kind in Nigeria to collect a long-term panel data on households and their characteristic, welfare, household consumption and multiple agricultural activities. The survey was an outcome of the partnership established by NBS with the Federal Ministry of Agriculture and Rural Development (FMA & RD), the National Food Reserve Agency (NFRA), the Bill and Melinda Gates foundation (BMGF) and World Bank (WB). Nigeria is one of the seven countries supported by the World Bank, through funding from the Bill and Melinda Gates Foundation (BMGF).

Probit model Specification

The reduced form of the probit model can be derived as follows:

$$Y = \frac{P_i}{1-P_i} = e^{zc}$$

1

After the exponentiation and taking the natural logarithm of will yield

$$\ln\{(Pi)|1 - Pi\} = \alpha + \beta_1age + \beta_2age^2 + \beta_3gender + \beta_4marital + status + \beta_5household\ size + \beta_6access\ to\ credit + \beta_7access\ to\ road + \beta_8distance\ to\ community\ centre + \beta_9access\ to\ remittance + \beta_{10}average\ food\ expenditure + \beta_{11}total\ food\ expenditure + \beta_{12}nonfood\ expenditure + \beta_{13}total\ expenditure + \beta_{14}livestock\ value + \beta_{15}basic\ education + \beta_{16}tertiary\ education + \beta_{17}food\ security + \epsilon$$

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First, the study estimated the probit model using equation (2) based on the perceived relevant individual household characteristics that influence the participation decision on non-farm income generating activities.

Results and Discussion

Household size, access to credit, average food expenditure, basic education, and food security are having significant and positive effects on non-farm income generating activities. On the other hand, age squared, gender, marital status, distance to paved road, access to remittance; total food expenditure, livestock value, and tertiary education have negative and significant effects on participation in non-farm income generating activities.

Table 1 Estimates of the predictors of participation into non-farm income generating activities.

Variable	Coefficient	Standard error	z-value	Probability
Age	0.01792	0.0113	1.52	0.130
Age2	-0.0003	0.0001	-2.38	0.017**
Gender	-0.2656	0.1229	-2.16	0.031**
Marital status	-0.0430	0.0218	-1.97	0.049**
Household size	0.03168	0.0133	2.39	0.017**
Farm size	-0.0037	0.0036	-1.03	0.305
Access to credit	0.2823	0.1686	1.67	0.094*
Access to road	0.0339	0.0807	0.42	0.675
Distance to Comm. Centre	-0.0029	0.0012	-2.55	0.011**
Access to remittance	-0.1478	0.0848	-1.74	0.081*
Average Food Expenditure	2.5001	1.1330	2.21	0.027**
Total Food Expenditure	-1.6660	9.7440	-1.71	0.088*
Non-food Expenditure	-2.0330	1.0110	-0.20	0.841
Total expenditure	1.14400	9.3550	1.22	0.221
Livestock value	-1.7000	5.8990	-2.89	0.004***
Basic Education	0.1149	0.0617	1.86	0.063*
Tertiary educ	-0.5496	0.1206	-4.56	0.000***
Foodc security	0.1862	0.0766	2.43	0.015**
Constant	-0.5804	0.3453	-1.68	0.093*
Pseudo-R ²	0.0590			
Log likelihood	-1376.26			
Observations	2319			
Prob>χ ²	0.0000			

*Denotes significant at 10%, **Denotes significant at 5% and *** *Denotes significant at 1%. Source: Author's Computations, 2014; General Household Survey- Panel Data, N=3372

Household Size

Household size has a significant and positive relationship with non-farm diversification (at the 5 percent level of significance), this is in accordance with a priori expectation that, household structure and size do influence the decision and ability of households to participate in non-farm income generating activities. This supports Ellis (1998) who asserted that when the marginal return

to labour time in farming for some individual fall below the wage rate or return of self-employment attainable of the fall, then the household is better off switching that individual into off the farm or non-farm activities. Turning to the issue of credit accessibility, lack of credit is a widely acknowledged as a constraint on potential diversification in non-farm activities. Credit market failures and low credit availabilities are the common futures in rural Africa. Credit allows rural households to purchase farm and productive inputs or make farm investment. The coefficient of access to formal credit was statistically significant, though (at the 10 percent level of significance) and has a positive effect on non-farm activities. The household heads with access to formal credit have higher probability to engage in non-farm activities with nine percent points.

Access to Community Infrastructure

Based on the community characteristics, empirical evidences have shown that, access to the community infrastructure such as roads; public transportation, post office and markets are likely to have a positive influence on non-farm income generating activities. Accesses to the road and market outlets are not only key to physical access to food, but also crucial public goods in non-farm activities. Table 1 indicates the distance to community centre has a negative impact on non-farm activities at the 5 percent level of significance. For instance, controlling other factors, communities located far distances away from urban centres are less likely to participate in non-farm activities by one per cent point. Households living very close to urban centres have better opportunities and market access hence engage more in non-farm activities than their counterparts living in closed settlements do. This agrees with Hung *et al.* (2010) who reported proximity and access to paved roads to be positively correlated to non-farm activities. This is because rural towns are the focal points of non-farm income generating possibilities (Haggblade *et al.*, 1988). The rural roads reduce the cost of all types of spatial transactions, including labour, output and input and consumer markets (Ellis, 1998). Contrary to expectation, access to remittance exerts a negative effect on non-farm income generating activities. Table 1 shows that households with access to remittance are less likely to engage in non-farm income generating activities with about seven percent points at the 10 percent level of significance. According to the school of thought that sees diversification in terms of desperation rather than accumulation, the household with no access to remittance are more likely to engage into on-farm activities as a survival strategy. Empirical studies generally show that between 80 to 90 percent of migrants do send remittances home. Even though, migrants maintain a flow of remittance to their kith and kins, the remittances are usually used to finance consumption and education of the family members rather than investment into non-farm activities (Ellis, 1998).

Food Consumption Expenditure

On the issue household consumption, on the average food consumption has a significant and positive relationship with non-farm diversification with three percent point. Since food consumption is a proxy for food security, it means that food secure households are more active in the non-farm activity than non-food secure. This support the hypothesis that diversification into non-farm activities have more to do with an issue of accumulation rather than a survival strategy. It supports the guise that viewed diversification as a process of wealth accumulation by those households that have adequate productive asset entitlements such as land and livestock.

Household Endowments

Considering the household endowment characteristics, value of livestock holding has a significant and negative effect on non-farm income generating activity participation with 0.4 percent points (at the 1 percent level of significance). This means that having more livestock assets may move household heads away from non-farm activities. It is clear that, accumulation of financial assets, man-made and natural resource assets, as well as human capital assets are potentially important to enhance household production and consumption (De Janvry *et al.*, 2005). According to *a priori*, one might expect this relationship, because it involves the family labour tradeoff between non-farm and on-farm activities. Integration of crop and livestock itself can be considered as another form of diversification within the agricultural sector. This further buttressed the finding of Hung *et al.* (2010) non-farm activities to be at the expense of livestock and horticultural on-farm activities, as these activities are particularly labour extensive. Therefore, this fact shows that, the success or failure of a particular household depends on their ability to accumulate productive assets that can be used in farm and non-farm activities.

Households Human Capital

Education of the household head as a major human capital is predictably considered to be of great importance to non-farm diversification. Most studies concur that, education facilitates or positively influence non-farm diversification while the lack of it constitutes a constraint that inhibits the development of diversified portfolios. Formal education up to basic level has a significant and positive influence on non-farm diversification among rural households by 0.04 percent point (at the 10 percent level of significance). This means that household heads educated up to a basic level (nine years of formal schooling) are more likely to be employed in non-farm activities. In a similar vein, however, contrary to expectation, better educated household up to tertiary level exerts significant and negative reinforcement on the probability of diversifying into non-farm income generating activities (at the 1 percent level of significance). The two findings regarding education are in line with social setting in rural Nigeria. Household heads that attained education up to tertiary level, due to their high skills, expertise and experience can be gainfully employed in formal public and private sectors of the economy than those with basic education. Most of the household heads with basic education can hardly be in the formal sector; hence, their only option is to diversify into non-farm rural sector. This result is consistent with other studies on diversification in Sub Saharan Africa (SSA) (Barret *et al.*, 2001; Lanjouw *et al.*, 2001; Abdullai and CroleRees, 2001; Alogo, 2012; Owusu *et al.*, 2011). Finally, food security increases the level of non-farm diversification at the 1 percent level of significance. Food secure households were more likely to diversify their sources of income, suggesting that food insecure households focused more on agricultural production. On the other hand, food secure households were more likely to have more sources of income and as expected, more food consumption as indicated in table 1. This agrees with Owusu *et al.*, 2011) who found non-farm work to be crucial in improving food security status of farm households in Northern Ghana.

Conclusion and Policy Recommendations

The study concludes that, socio-economic characteristics of the households example (gender, age, household size, access to formal credit, education and value of livestock holdings), played an important role in income diversification pattern among rural households. Other variables of significant impact are; macro and community level characteristics such as access to remittances distance to urban centre, food security and average expenditure on food. Policies directed towards

improving credit availability to rural households would not only improve food security, but also encourage investment in the rural non-farm sector. Availability of credit makes it easy to invest in business activities and productivity improvement in agriculture through the adoption of improved technologies and purchase of breeding stock. Therefore, government effort in addressing food insecurity should strengthen the issues of credit accessibility, especially in rural areas may be through micro-finance and the formation of cooperatives.

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