CHOICE OF PARTICIPATION IN DIFFERENT INCOME GENERATING ACTIVITIES OF RURAL FARM HOUSEHOLDS IN IMO STATE, NIGERIA.

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ABSTRACT

Rural households engage in different economic activities to generate income that rely on the household asset position, access to assets and institutional factors. The study set to ascertain the factors that influence the choice of the households to participate in different income generating activities. The study adopted multistage sampling technique to select 90 households, from 18 communities in two local government areas of each of the three agricultural zones of the state. Binary Probit model was use to analyse the data. The study showed that the age of the households negatively influenced the choice of activities households make in selecting income generating activities as there was much dependence on working household members by the more non working members, and such couldn't save enough to diversify into other income sources. There were more male headed households than female headed households and as such were not restricted by any cultural norms from diversifying to any income generating activities of their choice. Education positively influenced the choice of the household members into taking to non agricultural activities. Road net work negatively influenced the choice of economic activities as there were few access roads linking rural areas and markets in urban areas. Electricity had positive and significant effect on the choice of the households taking to non agricultural activities. At the subsistence level, the farm size used by the rural households had a positive effect on the choice the rural households make in taking to farm activities.

KEYWORDS: Choice, participation, income, generating, activities, rural and households

INTRODUCTION

Many reasons induce rural diversification out of farming. Sometimes diversification is born out of desperation, sometimes of opportunity. Risk may play a role, but is not a necessary condition for individuals to choose to diversify. Some diversifications are related to diminishing or time – varying returns to labour or land. Some are attributable to market failures (e.g., for credit) or frictions (e.g., for mobility or entry into high-return niches). And still another cause is risk management, either *ex ante* mitigation through portfolio choice or *ex post* coping through adaptation to shocks. Where returns to productive assets vary across time (e.g., land, labour or livestock across dry and wet seasons) or among individuals within a household or households within a community, data aggregated across time, individuals, or households will exhibit diverse assets, activities and incomes even if there is complete Ricardian specialization according to comparative advantage. Or if one family member has a special talent for weaving, metal working, pottery, or some other skill-based trade, heterogeneous intra-household skill endowments would lead to rational division of labour with the skilled individual pursuing his or her trade while the others work in less uniquely skilled occupations (e.g., farming).

At the household level, either of these cases will appear as diversified activities and income even if the individuals are wholly specialized. Similarly, a household in the semi-arid tropics may allocate all its labour to on-farm production agriculture during the wet season, when the returns to on-farm labour are high, then reallocate all its labour to non-farm activities (on-farm non-agricultural pursuits or off-farm wage labour) during the dry season. Seasonality no doubt suffices to explain a nontrivial part of the diversification commonly in annual data. If people are even somewhat forward-looking or (cooperatively or non-cooperatively) interactive, then they adjust consumption, investment, production, and savings behaviours in response to

predictable, seasonal variation. Rather, we merely wish to point out that in aggregated data, diverse activities, assets, and incomes can sometimes be quite simply explained (De Janvry, et. al, 1991).

Somewhat more sophisticated explanations turn on incomplete markets (e.g., for land, labour, credit, or insurance). Missing land markets, for example, can help explain why a skilled blacksmith who inherits land spends scarce time farming although his comparative advantage lies in blacksmith-work. Where land markets are operative, he might rent out or sell his land and devote all his time to blacksmithing. But in the absence of land markets, and in the presence of labour market imperfections that preclude his simply hiring others to work his land for him, his optimal use of labour time may well include time spent or relatively less productive farming, else his land asset returns nothing to him. Observed diversification of labour activities and income for this hypothetical individual would then be attributable primarily to the absence of markets (De Janvry, et.al, 1991). Similarly, a smallholder household endowed with much labour but relatively little land will, in the absence of well-functioning land markets, typically apply some labour in their own farm, and hire some labour out for non-farm wage employment. Because individual factors of production – not just labour, but also draft animals, land, etc. – face diminishing returns in most productive activities, when individuals or households are not endowed with the exact ratio that maximizes profits at prevailing (shadow) prices and there are not well-developed asset markets through which they can exchange assets to achieve the optimal mix, the diversification is the natural response. Individuals rationally allocate assets across activities to equalize marginal returns in the face of quasi-fixed complementary assets (e.g., land) or mobility barriers to expansion of existing (farm or non-farm) enterprises. For the poorest, this typically means highly diversified portfolios with very low marginal returns, or desperation-led diversification (Barrett, 1997; Little, et al., 1999; Reardon, et al., 2000).

In remote areas where physical access to markets is very costly and causes (household-specific) factor and product market failures, households diversify their production pattern simply to satisfy own demand for some diversity in consumption pattern (Omamo, 1998). This is the microeconomic analogue to the classic trade theoretic model in which movement from free trade to autarky reduces specialization so that local demand for multiple goods and services can be satisfied through own production. We must note, however, that missing markets can cut both ways, either encouraging or discouraging diversification. For example, missing credit markets can either induce or reduce rural diversification. Imperfect or missing credit markets can impede diversification into activities or assets characterized by substantial barriers to entry. Smallholders typically cannot afford to purchase a truck and enter the long-haul transport niche of the food marketing channel, no matter how profitable it might be (Barrett,1997). On the other hand, if non-farm options can be accessed easily, but credit markets are thin or missing, non-farm earnings can be a crucial means for overcoming working capital constraints to purchasing necessary variable inputs for farming (e.g., fertilizer, seeds, equipment, labour) or to making capital improvement (e.g., bunds, ridges, irrigation) to one's farm (Reardon, et al.,1994; Savadogo, et al.,1998; Reardon, et al.,1999). Or credit may be available, but land is unacceptable as collateral while evidence of steady non-farm cash income will suffice to enable one to borrow. Relatedly, many farmers feel a deep attachment to agriculture as a way of life and are willing to pay, in the form of foregone profits, to maintain the family farm. In the presence of working capital constraints, non-farm earnings may be essential to maintaining a viable farm that requires purchased inputs or that cannot generate enough cash income to satisfy the household's cash requirement (for taxes, consumption goods purchases, school fees, medicines, etc.).

In the absence of credits or insurance markets, individuals are typically unable to smooth consumption in spite of a strong desire to do so. When financial markets (for credit and insurance, in particular) are complete, economic theory suggests that individuals consume only the permanent portion of their income and save any transitory positive earnings and dissave to offset any transitory negative earnings. Or, if they are risk averse, they purchase insurance to relieve themselves of income risk. For many institutional, infrastructural, technological, and informational reasons, financial markets are highly incomplete in rural Africa so individuals must take action outside of financial markets in order to reduce consumption variability driven by real income variability. Diversification is a primary means many individuals reduce risk.

Diversification is widely understood as a form of self-insurance in which people exchange some foregone expected earnings for reduced income variability achieved by selecting a portfolio of assets and activities that have low or negative correlation of incomes (Alderman and Paxson, 1992; Reardon, et al., 1992; 1998; 2000). Note that the notion of self-insurance in an *ex ante* concept. Diversification is a means by which individuals mitigate their risk exposure. So coupling weakly covariate pursuits diversified cross sectors (e.g., crop production and seasonal metalworking) or across space (e.g., migration) can reduce aggregate income variability in the household. If, as is widely believed, risk aversion is decreasing in income and wealth, then the poor will exhibit greater demand for diversification for the purpose of *ex ante* risk mitigation than the wealthy. A related, but distinct role of diversification is to cope *ex post* with shocks to income. When crops fail or livestock die, households must reallocate labour to other pursuits, whether formal employment non-farm (e.g., wage labour), informal employment off-farm (e.g., hunting), or non-agricultural activities on-farm (e.g., weaving, brewing). Reardon, et al. (1992) reported that household's capacity to cope with the drought shocks of the mid-1980s in Burkina Faso were strongly associated with the extent of their non-farm diversification patterns. Barrette and Arcese (1998) similarly show that wildlife poaching in Tanzania in part responds to agroclimatic shocks that affect farm labour productivity. Much as risk preferences and differential access to wealth likely contribute to greater demand for *ex ante* diversification by poor people, so too are the poor more likely to diversify *ex post* as a coping response to shocks. They simply have less ability to self-insure through cashing in non-productive assets than the relatively wealthy.

One implication of the "diversification as risk management" rationale is that the need for self-insurance is a function of the availability of substitute social insurance, provided through transfers by the government, by non-profit agencies, by community or family members. Since social insurance can at least partly substitute for self-insurance, one would expect greater need for asset, activity, and income diversification where social insurance is relatively scarce (Weersink ,et al. 1998). This may help account for the unusually high dependence of African farm households on non-farm income, as governments, communities, and relief agencies offer meagre and frequently tardily safety nets, and the social fabric of traditional safety nets appears to be stretched or unraveling in many places.

Another explanation for diversification patterns is the existence of economies of scope in production. Economies of scope exist when the same inputs generate greater per unit profits when spread across multiple outputs than dedicated to only one output. The concept is thus distinct from that of economies of scale, in which per unit profits are increasing as the amount of all inputs to production grows. Economies of scale tend to favour specialization. Most empirical studies of African agriculture reported no significant economies of scale beyond a very small farm size, attributable in large part to the absence of sophisticated water control or mechanization. In this setting, there is little pressure to concentrate production in a single crop.

In most rural areas in the study area, due to market, financial, institutional and state failures, certain factors influenced the choice of participation in farm and non-farm income generating activities of the rural farm households. Households often decide on income generating activities they wish to undertake based on their asset position, socio-economic variables and institutional factors which act as push or pull variables .The choice or the preference of the rural farm households' participation in income generating activities are many a time, the available option for income generating activity .This study intended to ascertain the factors that influenced the choice the households make to participate in income generating activities.

MATERIALS AND METHODS.

A multistage random sampling technique was used to select three Local Government Areas (L.G.As) from each of the three agricultural zones in Imo State. A list of the communities in the selected nine local government areas was drawn with the assistance of community heads. Two communities were selected at random from each Local Government Area. These are, Akokwa and Ohiauchu from Ideato North L.G.A, Umuduruekwe and Amandugba from Isu L.G.A, Amanato and Ntueke from Ideato South L.G.A in Orlu Agricultural Zone. From Owerri Agricultural Zone, Obiangwu and Umuohiagu in Ngor-Okpola L.G.A, Avu and Ihiagwa from Owerri-West L.G.A, and Eziama and Ogbor from Ahiazu L.G.A, and in Obowo L.G.A Amuzi and Umuosochie,

Umueleke and Umuese from Ehime Mbano L.G.A. And Umuderim and Amakohia from Ihitte/Uboma L.G.A in Okigwe Agricultural Zone. Also with the help of community leaders, lists of farm households were compiled in each of the randomly selected communities. Five households were randomly selected from each community. In all, 18 communities and 90 households were sampled.

Data were collected using structured questionnaire. Accurate data on income and livelihood strategies and diversification were difficult to obtain in rural area surveys. This is due to the complexity of the income concept and income sources due to the fact that it is usually considered to be a highly sensitive and confidential data (Matlon, 1979). In order to overcome this problem and collect acceptable data, frequent monthly interviews were conducted and established good rapport with the participating households. This method reduced measurement errors, which could have arisen from poor memory recall. Data was collected for twelve months in order to capture all the income generating activities of the rural farm households.

Data were collected using structured questionnaire. The data were analysed using binary response probit model expressed as: $P(Yi = 1/X_i) = G(\beta x)$.

Where Yi= income from i activity.
P= probability of earning income from the defined activity.
X1= age of the household head (years)
X2 = gender of the household head (m/f)
X3 = education level (years)
X4 = distance of the household to the road (km)
X5 = electricity (dummy 1= presence, 0 = none)
X6 = labour experience (yrs)
X7 = membership of social organization (number)
X8 = crop production (₦)
X9 = animal production (₦)
X10 = agricultural wage labour (₦)
X11 = non-agricultural wage labour (₦)
X12 = self employment income (₦)
X13 = remittances (₦)
X14 = farm size (ha)

Participation in an income activity is measured by a binary variable which is zero if the household does not participate in an activity. Interest is on how the vector of explanatory variable X influences the possibility that the binary dependent variable Y takes on the value 1.

RESULTS AND DISCUSSION

Factors Influencing Participation in Farm and Non-farm Income Generating Activity Using Probit Function

Variables	Parameter Estimates	Std.error	T-values	P-values
Age	-0.0813	0.0237	-3.4159**	0.0132
Gender	0.0922	0.0319	2.8903*	0.0142
Education	0.0621	0.0167	3.7186**	0.0128
Distance	-0.0924	0.0406	-2.2759**	0.0522
Electricity	0.0853	0.0247	3.4534**	0.0131
Lab. Exp.	0.0559	0.0138	4.0507**	0.0116
Mem.soi.org	0.0721	0.0587	1.2283	0.3129
Crop. Product	0.0691	0.0214	3.2289**	0.0126
Animal Production	0.0342	0.0296	1.1554	0.2918
Agw lab	0.0423	0.0338	1.2515	0.3147
Non-agw lab.	0.0839	0.0208	4.0337**	0.0129
(Others).	0.0738	0.0224	3.2946**	0.0134
Remittances	0.0514	0.0421	1.2209	0.3014
Farm size	0.0835	0.0273	3.0586**	0.0123
Constant	-25.0164	4.1342	-6.0511	0.0113

Source: Field Survey Data 2010

No of observation (N) 90
No of parameters (K) 15

Degree of freedom 27
Model chi-square 63.1129**
** Significant at 5%

In identifying factors that influence the choice of participation in farm and non-farm activities, emphasis was placed on diversification out of agriculture, that is, the number of income sources and their relative importance to the household income as the rural households predominantly engage in one form of farm activity or the other, basically at the subsistence level. And therefore ,sources of income are those activities that generate income to the rural households However, the other socio-economic factors that assisted to influence the output or income from farm and non-farm activities include;

The coefficient of age (-3.4159) was significant and negative. This implied that the age of the household members negatively influenced the choice of taking to farm and non-farm activities to household income because of large number of dependents on those household members that are independent and as such, reduces income and other productive activities to which the saved income could have been put. Household will have a range of skills and inclinations that allow income diversity at the household level. However, since age was negatively related, it means the rural households do not have most of their members at the adult-working age.

The coefficient of gender (2.8903) was significant and positive. This indicated that gender of the household members had positive influence on the choice of income generation and diversification of the activities. This result was due to the fact that most household members were made up of more male headed households and as such not constrained by the cultural and traditional issues not to venture into any activities of choice of the household members.

The coefficient of education (3.7186) of the household heads was significant at 5 percent and positively related to the choice of income generating activity or income sources. This implied that education open the door to a number of different economic activities, either because of formal requirements for wage-earning positions or because education (particularly, literacy and numeracy) facilitates learning about new self-employment opportunities and managing them efficiently. And as the decision makers of the households, it influenced the choice to undertake different activities they were engaged in due to experience and knowledge.

The coefficient of distance to the tarmac road (-2.2759) was significant at 5 percent and negatively related to the choice of income sources. This implied that as households are further away from the road, the income sources decline. This is as a result of no or bad road to sell their farm produce or reduced assistance of good road to income generating activities. Hence, road network negatively and significantly reduces the chances of the rural household members' involvement in income generating activities and therefore limit the choice of rural household members participation in income generating activities of their choice.

` The coefficient for electricity (3.4534) was significant at 5 percent and positively related to factors influencing the choice of participation in non-farm and farm income generating activities. The availability of electricity in the rural household facilitates participation in income generating activity because non-farm activities are supported by electricity which facilitates the use of electrical tools and appliances. The rural households that were involved in restaurants, bush bars and other bars, as well as electricians, welders, barbers, mobile phone operators, music recorders rely heavily on electricity for their activities in the rural areas.

The coefficient of farm size (3.0586) was significant and positive. This is an indicator of availability of land, particularly given that few rural households buy, sell or rent land. Thus, the farm size is a measure of production capacity in the rural areas and influences the production possibilities of the households and then the choice taken to engage in the activities that will improve livelihoods. Due to the fact that the rural areas are characterized by subsistence farming, the significance of farm size and positive relationship of farm size on factors that influenced their choice of the rural households choosing farm activities were because the households' food need were met. This also implied that there are enough tradable surpluses from farm activities after meeting the household's needs to generate adequate income. This enables the household members to diversify

into more remunerative non-farm activities that usually require high start-up cost.

The significance and positive relationship of non-agricultural wage (4.0337) to choice of activity stemmed from the educational background of the household members, as education of the household members has positive effect and significance on the choice of such activities. Education facilitates learning about self-employment opportunities and managing them well.

The coefficient of labour experience (4.0507) contributes positively and significantly to choosing crop production activities as it gives skills and prudent knowledge of such activity.

CONCLUSION

Diversification of income generating strategies of the rural farm households shows that there is the need to look beyond agriculture in the development policies. The overall importance of agriculture particularly for the rural farm households implied that the promotion of rural farm and nonfarm activities ought to constitute a key component of any rural development strategy.

The removal of constraints to and expansion of opportunities for diversification are desirable overall policy objectives because they give rural farm households more capabilities to improve livelihood and raise living standards.

Poverty alleviation policy generally aims to improve the asset holding of the poor, either by endowing them with additional assets by increasing the productivity of the assets they already hold, or both. Diversification patterns reflect individuals' optimal balance between expected returns and risk exposure conditional on the constraints they face. This is because; it offers a glimpse as to what rural farm households presently consider their most attractive options. The study of rural livelihood income strategies thus offers important insight as to what sort of policy or project interventions might be effective in improving the asset holding or access of the rural farm households for improved standard of living and sustainable rural development in Nigeria.

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