# Determinants of income among farm households in Orlu Agricultural Zone of Imo State, Nigeria

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**Abstract:** Worsening income distribution with economic growth is  evident in Nigeria. To provide an environment that  will stimulate growth and also ensure  an equitable income distribution needs a  careful study of  income determinants that will be used in carefully  tailored policies.  This study determined an average farm household income of N60,197.81 per  annum and a per capita income of  N7,524.73. also, a Gini-coefficient of 0.488 was determined.  The income regression parameter estimates showed that the variables, extension services property income and farm size were positively correlated with farm household  income and were  also significant  at five percent.  The variables income from pension, hours spent on farm income from handicraft education of household head, income transfers and age of household head were positively correlated with farm household income but not statistically significant at  five percent.  The hypothesis of no significant difference in the contributions  of the determinants of farm household  income was  tested and rejected at five  percent level.  It is suggested that  a careful integration of  these  income determinants  in rural development policies will no doubt improve the farm households purchasing power as well as  the income distribution in the study area. [Report and Opinion 2010;2(8):32-35]. (ISSN: 1553-9873).

**Key words:** Income, Farm Household

## 1. Introduction

All productive  resources in the economy are on owned  by several person (s). The owners sell the services of the resources and the payments received in exchange constitute their incomes. A farm labourer's income depends on the number of labour hours sold and the price or wage rate of labour. This income in turn determines the share of the economy's output of goods and services that can be purchased. Given the implications for the welfare of individuals and  families  in the economy, it is little wonder that the determination of resource prices is frequently a matter of controversy. What is a  just return or a fair return for a farm household? Questions  such as this go to the heart of often emotional  issue of  income distribution  and  the  factors  that  influence distribution of income.  Even if every  individual  in an occupation such as  farming were of identical training and even if there is complete mobility  of labour among different  agricultural zones of the state still wide  differences in incomes would  arise, due to differences in, age, size of community, living costs, hours spent on farm, education etc. (Matton, 1979).

Waud, (1983) noted that too little is known about the identity and effects of the important factors of income distribution. This  paper is  an attempt to analyze the factors   affecting income distribution among  farm households in  Orlu agricultural  Zone of Imo State as an aid to rural development.

## 2. Materials and Methods

Farm household income is often determined by a range of socio-economic and demographic factors. Knowledge of such factors have to be assembled carefully to determine their levels  of influence. Regression model was used in this study to specify and validate empirical data collected.  It was also used to verify hypothesis regarding the determinants of farm household income and to draw inferences that  could guide research and policy decisions. Farm households were selected from 10 Local Government Areas of  Orlu agricultural zone of Imo State, Nigeria. The sample farm households were randomly selected from a  list of farm households competed for this  study from each town or community. From the list of farm household complied 100 farm households were  randomly selected.  Accurate data on income is extremely difficult to obtain in rural studies.  This is due to  the complexity of the income concept  and due to the fact that income is usually considered to be a highly  sensitive and  confidential datum.

For the  above reasons, this  study adopted intensive   cost-route approach to   data collection. This  implied frequent  weekly  interviews  and establishment of good rapport   with participating households.   This  method reduced  measurement errors  which could have arisen from poor memory recall. Data for this study were collected with the aid of questionnaire  for  a period of  12 months.  Over this  period,  field  workers  were  trained  to  keep detailed records on farm household income and their sources.  The data  generated was  subjected to  linear

Regression Model, using the Ordinary Least Squares Method (OLS) the hypothesis of no significant difference in the marginal contributions of the determinants of farm household income was tested at five percent level of significance with (n-k) degrees of freedom, the hypothesis was of the form below.

$H_o$     :     $b_1 = b_2 = \ldots = b_9 =$ O

Hi     ;     $B1 = b2 = \ldots = bg =$ O

Where

n     =     member of observation

k     =     Number of parameters estimated.

The null – hypothesis was tested by comparing the estimated statistic with the tabulated value at five percent level of significance. The null – hypothesis was accepted if the t – statistic is less than the tabulated value with (n-k) degrees of freedom for the relevant estimates $b_1$ to $b_9$. On the other hand the null – hypothesis of the relevant parameter estimates $b_1$ to $b_9$ is rejected if the estimated t – statistic is greater than the tabulated value at (n-k) degree of freedom and at five percent level of significance.

If the estimated t – statistic is greater than the tabulated value at (n-k) degree of freedom and at five prevents level of significance. The t ration for each parameter estimate was computed as shown

$$T = \frac{bi}{Sb_i}$$

**Where**

t     =     estimated value of t-statistic

bi     =     parameter estimate of bi

Sbi     =     Standard error of bi

The test for overall significant influence of the independent variables on the dependent variable which is total farm household income was done as shown below

$$F = \frac{R^2/(K-1)}{(1-R^2)/(N-K)}$$

F     =     estimated value of F - Statistic

R2     =     Multiple regression coefficient

K     =     Number of parameters

N     =     Number of observations

The estimated values of the F was compared with the tabulated F – value at five percent level of significance the null hypothesis was rejected if the estimated F statistic is greater than the tabulated value at (K-1) and (N-K) digress of freedom. This meant the acceptance of the alternative hypothesis.

## 2.1 The Regression model

In analyzing the determinants of household income, the ordinary least squares (ols) model of regression was of the form specified below.

Y     =     dependent variable

$X^{'s}$     =     Independent variables

U     =     error term.

The explicit model was of the form below

Y     =     $b_O = b_1X_1 + b_2X_2\ldots b_9X_9$

Where

Y=Total farm household income (₦)

$X_1$=Visit of extension agents (number of visits)

$X_2$=Percentage income from property

$X_3$=Cultivated land area (Hectares)

$X_4$ = Hours spent on farm work

$X_5$ = Percentage of income from pension

$X_6$= Percentage of income from handicraft

$X_7$ = Education of household head

$X_8$ = Percentage of income from transfer payments

$X_9$ = Age of household head (years)

The *a priori* signs of all the variable were expected to be positive. Different functional forms were tried and the lead equation was chosen based on $R^2$, F – ratio, number of variables significant and a priori expectations.

## 3. Results and Discussions

The exponential functional form was chosen from linear, log and semi log functions. The estimated parameters are shown below in table 1.

**Table 1: Parameter estimates of the exponential regression model**

| Variables | Co efficient | Std error | t-value |
|---|---|---|---|
| Constant | 9.583 | 0.338 | 28.316 |
| Visit of Extension Agents ($X_1$) | 0.474 | 0.136 | 3.490* |
| Percentage of income from property ($X_2$) | 0.0113 | 0.005 | 2.063* |
| Cultivated land area ($X_3$) | 1.978 | 0.618 | 3.202* |
| Hours spent on farm work ($X_4$) | 0.0592 | 0.047 | 1.272 |
| Percentage of income from pension ($X_5$) | 0.0071 | 0.004 | 1.772 |
| Percentage of income from Handicraft ($X_6$) | 0.0115 | 0.016 | 0.738 |
| Education of Household head ($X_7$) | 0.0934 | 0.103 | 0.909 |
| Percentage of income from transfer ($X_8$) | 0.0014 | 0.008 | 0.169 |
| Age of house head ($X_9$) | 0.005 | 0.06 | 0.080 |

Source: Field data 2003

$R^2$    =    0.464
F    =    8.643
*    =    Significant at 5 percent

Hours spent on farm is not significant at five percent level but it is positively corrected with household income. This has something to do with age of the farmers which was found to be between 40 and 55 years. In almost all occupations, earnings rise for a time as the individual gains experience any knowledge but then turns down at a latter age. The low average hours spent on the rural farms due to their small size could lead to love efficiency of labour in terms of average product of labour. This can lead to farm households donating their surplus labour to off – farm activities in the study area.

The parameter, percentage of income from handicraft is not significant at five percent, but it is positively correlated with household income the reason for this could be the low prices attracted by rural handicrafts. The parameter, education of the household head is positively correlated with household income but not significant at five percent. The reason for this may be due to the fact that better educated and skilled household heads abandon farming for better income generating employment. The parameter, percentage of income from transfer payments is positively correlated with household income but not significant at five percent. The reason for this may be due to its unreliability and disincentive nature to increased productivity on the part of farm households that receive them.

The parameter, age of household head is not statistically significant at five percent level but it is positively correlated with farm household income. According to life cycle income hypothesis , the younger the household head the higher the accumulated income especially during the middle age of 45 years. This is

important since the modal age of the farm household heads in the study area is between 45 years and 55 years of age which could be called middle ages, the reason for low significance of age may be due to the fact that income is negatively correlated with age later in life at the age of retirement of about sixty years of age. The parameter estimate for the extension variable is significant at five percent level. The sign of the extension variable is also positively correlated with farm household income. This is in line with a priori expectation. The exposure of farm households to extension derives information has been found to be an important factor affecting the level of Imo household income (IITA,1992) increased farm household exposure to extension programmes in the form of multiple visits by extension personnel and through information dissemination as well as technical support to farmers, greatly increase farmers ability and access to technology with potential benefits (Ibekwe 1994).

The parameter percentage of income from property was found to be significant at five percent level of significance. It was also found to be positively correlated with house hold income. Property income can be accumulated to a much greater degree than skill, so this non farm capital income which can contributed to farm household production scale is important in determine the level of farm household income stocks of working capital in form of rents is a measure of accumulated wealth and represents a source of immediate cash in the event of production shortfall of other household financial emergencies.

The parameter, percentage of income from pension, is not significant at five percent but it is

positively correlated with household income. Persion like property income is a source of off-farm income when available it can help to increase and improve the farmers production technology and scale. The reason for its non – significance may be due to the fact that pension income is limited to farm households who are retired.

The parameter, farm size as significant at five percent and its is also positively correlated with household income in the study area. Land is a single most important resource in rural farm production. Farmers with large fields operate with better economics of scale with regards to supervision management and capital investments. These in turn lead to a higher returns (Olomola, 1988).

## 3.1 Testing Of Hypothesis

The Hypothesis which states that there is no significant difference between the determinants of farm house hold income to the study area was tested and rejected at five percent level of significance (0.05). This is because some of the determinants of farm household income were significant at five percent and are therefore not equal to zero. Also the F-Statistic, which is a measure of significance of the regression model, is significant at five prevent. This led to the acceptance of the alternative hypothesis of significant different between the determinants of the farm household income. The implication of this significant difference between the determinants of farm household income in that various combinations of the determinants of farm household income account for the income status of the farm household in the study area.

## 4. Conclusions

Worsening income distribution with economic growth is evident in Nigeria and a number of countries in West African (World Bank, 1992). Nigerian rural farm households have been shown to be made up of household units whose incomes one low in the face of rising inflation and decreasing farm production. There is therefore a need for policies that will influence the pattern of agricultural growth in ways that can change the income level of rural farm households to grow fast. However such policies will be lacking if they do not incorporate micro level data on the determinants of farm household income. This study was therefore designed to partially fill the knowledge gap on the nature and determinants of farm household income within an essentially traditional farming society characterized by high population pressure and a mixture of use of traditional and improved farm inputs. The most fundamental means of increasing household incomes while at the same time promoting broad based benefit among the farm households is through the development of improved farm production packages which are compatible with the factor endowments of rural farm house holds. These

technical/packages should economize on these identified factors that are limiting for the farm house holds.

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