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Determinants of Participation in Nonfarm Economic Activities in South East Nigeria: A Tobit Analysis Approach

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Abstract
This study had looked at the involvement of small scale farmers in nonfarm income generating activities in the south east region of Nigeria. Specifically it investigated the probability of farmers participating in nonfarm income generating activities. A Tobit model was used to analyse cross sectional data collected from 180 farmers selected by means of systematic random sampling technique. The result shows that on the average the farmers were aged 48 years and were characteristically smallholder farmers. All the coefficients had the hypothesized signs in line with *a priori* expectations. Eight of the variables including age of the farmers, level of formal education, dependency ratio, remittance, farm size, size of farm income, farming status and distance to nearest city were statistically significant. The coefficients of age of the farmers, remittance, and farm size as well as size of farm income, farming status, and distance to nearest city are all negative. These imply that a unit decrease in age of the farmer, remittances, farm size of farm income, time spent on farming activities and distance to cities would bring about increased participation of farmers in nonfarm income generating activities. A deliberate policy of rural development through massive provision of infrastructures will see more people climbing out of poverty through participation in nonfarm activities.

INTRODUCTION

The traditional vision of rural economies as purely agricultural is clearly becoming obsolete (Reardon, 1997). This is because this observation would probably be the case for underdeveloped and stagnant rural economies. In Nigeria, some regions like the south east have rural areas that are experiencing rapid development in infrastructure and transportation. There are also developments in rural industries and relocation of industrial estates to the rural areas. Hence, households across this region earn an increasing share of their income from nonfarm sources.

The role of nonfarm activities in promoting growth of the rural economy and reducing poverty is well documented (Ranis and Stewart, 1993; Rosegrant and Hazell, 2000; Roslan and Siti 2011; Brazil and Bukenya, 2012). Regarded as the rural nonfarm economy (RNFE), this sector in south east Nigeria, accounts for a large proportion of rural employment and income, and grows faster than agriculture with the development of the overall economy. As Rosegrant and Hazell (2000) observe, "From relatively a minor sector, often largely part-time and subsistence-oriented at the early stages of development, the rural nonfarm economy develops to become a major motor of economic growth in its own right, not only for the country side but for the economy as a whole. Its growth also has important implications for the welfare of women and poor households, sometimes helping to offset inequalities that can arise within the agricultural sector". They further observed that despite the persistent image of Africa as a continent of "subsistence farmers" nonfarm sources may already account for as much as 40 – 45 % of average household income and seem to be growing in importance. In fact, nonfarm income could eventually constitute an important and increasing share of total agricultural household income, and the dependence of agricultural households on agricultural activities as their main source of income might be declining. Thus, off-farm employment could become an important option to farmers and agricultural households to increase their household income sources, and hence reducing rural poverty.

Most of the World's poor live in rural areas, and agricultural development appropriately is the focus of many poverty reduction strategies, especially in developing countries like Nigeria where poverty remains acute. In places like south east Nigeria, however, rapid population growth and relatively egalitarian access to land result in farm size so small that households cannot climb out of poverty solely through growth in farm productivity. Remunerative nonfarm employment may be necessary for income growth and also for investment in agricultural intensification. The growth of the rural nonfarm sector may therefore be more important than efforts meant to directly increase small farmer productivity in economies dominated by tiny farms that may prove uneconomical if farmers fail to intensify.

Generating productive employment for the growing labour force remains a formidable challenge for the Nigerian economy. The challenge is even more in a place like the south east Nigeria with its characteristic high population density occasioned by acute land scarcity. The lands in south east Nigeria is currently being threatened by gully erosion which is occupying more than 4% of its land area (Ike, 2011).

Subsequently, the capacity to absorb incremental rural labour force in agriculture is extremely limited because of lack of space for expansion of land frontier and also the intensity of cropping which has almost

reached the limit. Again, the growth of crop production now depends almost entirely on technological progress and all these have resulted in low employment elasticity of output. This raises some key questions; whether there is minimum farm size below which rural households cannot effectively undertake high-return intensified production and whether farm sizes are too small for most rural households to be able to generate agricultural incomes sufficient for availing poverty.

At current levels of land availability in south east Nigeria and with inexorable population increases, even intensified farm production may offer only a modest foundation for secure livelihoods. Moreover it is unclear whether the funds necessary to invest in agricultural intensification can be generated through farming. Indications are that there are emerging structural changes in the composition of rural labour force in favour of the nonfarm activities in south east Nigeria.

The potential of diversifying and participating in nonfarm economic activities among the agricultural households, however, raises the question on the determinants to participate in nonfarm employment. Specifically this study sought to examine the socioeconomic characteristics of the farmers who are most likely to participate in nonfarm employment. It also analyzed the critical factors that influence farmers in their decision to participate in nonfarm employment.

METHODOLOGY

Study Area

The study area is south eastern Nigeria. This is one of the six geopolitical zones in Nigeria and it is occupied by the Igbos, the third largest ethnic groups in Nigeria. South east Nigeria comprises five states: Abia, Anambra, Ebonyi, Enugu and Imo state. The zone has a population of 16.32 million composed of 8.31million (50.92%) males and 8.01million (49.08%) females (NPC, 2006). South eastern Nigeria is a region often associated with high population densities and agroforestry intensification due to increased land scarcity (Ugwu, 2005). The Igbo race is a very high enterprising ethnic group in Nigeria.

Sampling/Data Collection

Three states: Anambra, Enugu and Imo were randomly selected for this study. Three local government areas (LGAs) were sampled from each state to give nine LGAs selected for the study. These local government areas are Anambra west, Awka north and Ekwusigo from Anambra state; Awgu, Nkanu west and Udenu from Enugu state, while from Imo state were Ideato North, Oru West and Okigwe local government areas. Two communities were sampled from each of the local government areas to give 18 communities selected for the study. The population of households in the selected communities formed the sample frame. A sample of 10 households from each community was selected and this gave a total of 180 households selected and utilized for the study.

In collection of data, this study used a narrow definition of the nonfarm economic activities that includes only non agricultural production activities. Three types of such activities were distinguished as follows:

- Manual labour-based activities, such as self employment in cottage industries, mechanics, wage employment in rural business enterprises, transport operations including the motor cyclists popularly called ‘okada’, as well as the tricycle (‘Keke’) riders and construction labour (nonfarm labour);
- Human capital-based occupations, such as salaried service in public and private sector institutions, teachers, religious leaders, lawyers, village doctors, and various types of personal services (services); and
- Physical and human capital-based activities, such as agro-processing, shop keeping, peddling, petty trading, GSM phone call operators, medium and large scale trading, and contractor services (business enterprises).

Data were generated on socioeconomic characteristics of the respondent households such as age of household heads, gender, level of educational attainment, household size, dependency ratio, farm size, farm income, remittance to household and distance of farmer to the nearest urban area.

Data Analysis

Data were analyzed using descriptive statistics, and the TOBIT regression model. Descriptive statistics was used to summarize the socioeconomic characteristics of the respondents as well as the nature of their involvement in nonfarm income generating activities. Literature shows that some authors have used the Logit model approach to determine the effect of various socioeconomic characteristics on the probability for participating in nonfarm employment. Among them are Roslan and Siti (2011), Abdulai and Crolerees (2001), Bagamba et al, (2007). The departure of this work is the application of Tobit model. Tobit model was used to analyze the factors that affect the participation of a farmer in rural nonfarm economic activity. The model is appropriate in this study since the dependent variable is the level of participation in a variety of nonfarm income generating activities. Thus the dependent variable is between 0 limit and continuous level of participation above the limit. According to Eboh 2009, Tobit model is useful in situations where the dependent variable has the property of jumping discretely to zero or any other threshold.

A particular form of nonfarm income generating activity is engaged in when the utility from engaging in it exceeds that of non participation. Though it is not observed directly, the utility (U_{ij}) for a particular farmer (i) to participate in a nonfarm income generating activity (j) can be defined as a function (H_i) of some vectors of entrepreneurial associated characteristics (X_j), plus an error term with zero mean and constant variance (eij). Thus

$$U_{ij} = e_j F_i (H_{i,} X_i) + e_{ji}; j = 1,2,; = i = 1,....., n \quad \text{..... (1)}$$

Where 1 represents participation in a nonfarm income generating activity and 0 represents reliance on farming activities as the only source of income. The i^{th} farmer adopts $j = 1$ if $U_i 1 > U_i 0$.

Farmer-specific characteristics include such variables as age of household heads, gender, level of educational attainment, household size, dependency ratio, farm size, farm income, remittance to household and distance of farmer to the nearest urban area. The utility of participation in a nonfarm income generating activity U_{ij} can be inferred from farmer's continuous choice over a predefined interval (intensity of participation). This justifies the use of Tobit model, as has been applied in previous studies of Agricultural adoption studies (Norris and Batie, 1987; Lynne et al, 1998; Adesina and Zinnah, 1993). This model enables one to estimate the likelihood of participation in a nonfarm income generating activity and the extent (i.e, intensity) of participation.

The lower-limit Tobit model following from the work of Fernandez-Cornejo and McBrid (2002) can be expressed as:

$$Y_{i^*} = \beta X_i + \varepsilon_i \quad \text{..... (2)}$$

Where Y_i* is a latent variable (unobserved for values smaller than 0) representing participation in nonfarm income activity, X is a vector of independent variables, which includes the factors affecting participation in non farm income generating activities, β is a vector of unknown parameters and ε is a stochastic error term assumed to be independently and normally distributed with zero mean and constant variance and i = 1, 2, ….., n is the number of observations. As applied by Oladele (2005), denoting Yi (the level of participation in non farm income generating activities as the observed dependent (censored) variable, it will fall into the range:

$$Y = \left[\frac{0}{y^*} \frac{if}{if} \frac{y^*}{y^*} \frac{\leq 0}{\geq 0} \right] \quad \text{..... (3)}$$

Unlike traditional coefficients, the Tobit coefficients cannot be interpreted directly as estimates of the magnitude of the marginal effects of changes in the explanatory variables on the expected value of the dependent variable. Each marginal effect in a Tobit equation includes both the influence of the explanatory variable on the probability of participation as well as intensity of participation. As Adesina and Baidu-Forson (1995) as well as Chukwuji and Ogisi (2006) indicated, the total (marginal) effect accounts for the simultaneous effects of the number of participants and the extent of participation by both current and new participants. To decompose the relevant effects of changes in explanatory variables on the dependent variable, the McDonald and Moffit decomposition method as applied by McFadden (1984) and adopted by Chukwuji and Ogisi (2006) is employed as follows:

$$E(y) = F(z) E\left(y^* \right) = X\beta F(z) + \sigma f(z) \quad \text{..... (4)}$$

Where:

E(y) indexes are the expected value of the level of participation in nonfarm income generating activities. It indicates the level of participation to be made by new participants;

E(y*) gives the expected value of participation by those who are already involved in nonfarm income generating activities;

z, given as $\frac{(\alpha + \sum_{i=1}^{n} x_i \beta_i)}{\sigma}$ is the z-score for an area under the normal curve, evaluated as the mean values of Xi;

α is the constant term in Tobit estimate;

βi are the coefficients of the independent variables;

f(z) is the standard normal density distribution function;
F(z) is the cumulative standard normal distribution function. It predicts the probability of participation in nonfarm income generating activity, given the mean value of the explanatory variables. That is the percentage chance of participation by new participants in non farm income activities.

The derivatives of E(y) with respect to Xi yields:

$$\frac{\delta E(y)}{\delta x_i} = F(Z)\frac{\delta E(y^*)}{\delta x_i} + E(y^*)\frac{\delta F(z)}{\delta x_i} \quad \text{..... (6)}$$

Multiplying both sides of equation (6) by x/y and following the LeClere (1994) method will result in the estimation of elasticity of expected participation intensity and the elasticity of participation probability as:

$$\frac{\delta E(y)}{\delta x_i}(x/y) = F(z)\frac{\delta E(y^*)}{\delta x_i}(x/y) + E(y^*)\frac{\delta F(z)}{\delta x_i}(x/y) \quad \text{..... (7)}$$

When transformed algebraically, the following expressions result:

$$\frac{\delta E(y^*)}{\delta x_i} = \beta\left[(1 - z\frac{f(z)}{F(z)} - \frac{f(z)^2}{F(z)^2}) + z\frac{f(z)}{F(z)} - \frac{f(z)^2}{F(z)^2}\right] \quad \text{..... (8)}$$

where ; $\beta\left[1 - z(\frac{f(z)}{F(z)} - \frac{f(z)^2}{F(z)^2})\right]$, is the elasticity of expected participation intensity and $\beta z(\frac{f(z)^2}{F(z)^2})$, is the elasticity of probability of participation. The summation of the elasticity of expected participation intensity and that of the probability of participation gives the total elasticity.

The descriptions of variables as well as the *apriori* expectations of the relationships between them are as presented in Table 1.

RESULTS AND DISCUSSION

The summary statistics of the relevant socioeconomic variables of the respondents are presented in Table 2. On the average, the respondents were about 48.6 years of age, with a range of 28 - 67 years. 134 of the respondent households (74.4%) were males. Majority of the respondents had formal education ranging from incomplete primary education to tertiary education. On the average, they had about 9.37 years of formal education. The average household size was about 6, with some households having as many as 15 members, while a few had just 2 members. The average farm size of the respondents was about 1.78 hectares with some having just about 0.45 hectares. The income level of the respondents ranged from ₦50,000.00 ($312.5) to over ₦351,000.00 ($2,193.75) with an average of farm income of ₦93,572.00 ($584.83).

Analysis of the Determinants of Participation in nonfarm Employment

The Tobit coefficients, standard errors, t-ratios and their levels of significance are as presented in Table 3. All the coefficients had the hypothesized signs in line with *apriori* expectations. Eight of the variables included in the model are significant. These are age of the farmers, level of formal education, dependency ratio, remittance, farm size, size of farm income, farming status and distance to nearest city. The coefficients of age of the farmers, remittance, and farm size as well as size of farm income, farming status, and distance to nearest city are all negative. These imply that a unit decrease in these variables would bring about increased participation of farmers in nonfarm income generating activities in the area.

The coefficient for the age of farmers is negative and significant at the 0.01 level. This implies that the older the farmer, the less the probability for him/her to participate in nonfarm employment. This is so since older farmers have gotten used to life in farming and will see leaving the farm for other income generating activities as a distraction. This finding is in line with that of the earlier works done by Roslan and Siti (2011) in Malaysia, Howard and Swidinsky (2000) in Canada and also Matshe and Young (2004).

On the other hand, the coefficient of level of formal education attained by the farmer is positive and

significant at the 0.10 level. This implies that the more educated a farmer is, the more the likelihood that he or she will look for additional source of income outside farming. This is the case particularly in a developing country like Nigeria where agriculture is still generally in the hands of smallholders with the attendant difficulty in accessing finance for commercialization and subsequent low productivity. Going into full time farming by the highly educated is not a common phenomenon in Nigeria.

The coefficient of dependency ratio is positive and statistically significant at the 0.05 level. This is in line with *apriori* expectation. Dependency ratio is defined as the ratio of those typically not in labour force (the dependent part) and those typically in the labour force (the productive part). It is used to measure the pressure on productive population (en.wikipedia.org/wiki/Dependencyratio). As the ratio increases, there will be an increased burden on the productive part of the population to maintain the economically dependent. Hence, the higher the dependency ratio, the higher the probability of a farmer seeking additional means of income through engaging in nonfarm income generating activities.

The result of the model also reveals that remittances i.e. transfer payments has a negative coefficient and is statistically significant at the 0.05 level. This implies that the more a household receives money from relations abroad or local, the less the probability of seeking employment in the nonfarm sector. This is in line with the findings of Roslan and Siti (2011) in Kedah Darul Aman, Malaysia.

The size of farm operated by a farmer negatively affects the probability of the farmer engaging in nonfarm income generating activity. The coefficient of farm size is negative and statistically significant at the 0.01 level, indicating that the more the size of the farm, the less the chance of the farmer engaging in nonfarm income generating activity. This is in line with the *apriori* expectation as a farmer with large agricultural farm land or large livestock herds will have little or no time to engage in no other nonfarm employment. This finding is however at variance with that of Roslan and Siti (2011), and Benjamin dan Kimhi (2003) who separately found that farmers with large farm size of farm land would probably spend less time at their plot of land.

The result of the analysis also show that the coefficient of the ratio of farm income i.e. income from agricultural activities to total income of the farmer is negatively signed and statistically significant at the 0.01 level. This is in line with *apriori* expectation as the probability to participate in nonfarm income generating activities will be low if the proportion of income from agricultural sources in total income of the farmer is very high. This finding is in agreement with that of Roslan and Siti (2011) who stated that this relationship is sensible since those farmers whose main income is from agricultural sources are probably also those who spend most of their time in agricultural activity and hence they will have less inclination for participating in nonfarm employment.

This study also discovers that the status of the farmer (whether full time or part time) which is also measured by the number (length) of working hours allocated to agricultural activity has a negative relationship with the decision to participate in nonfarm employment and is statistically significant at the 0.01 level. This is in line with the *apriori* expectations since the longer the hours allocated to perform the agricultural activity, the shorter the time available to perform nonfarm activity.

The variable of distance to nearest city is also negatively related to the decision to participate in a nonfarm income generating activity. The coefficient of the variable is also statistically significant. This is as expected as the nearer (i.e. the less the distance) a farmer is located to a city, the more the opportunities of engaging in higher remunerating nonfarm employment that are easier to find in cities than rural areas. Hence the probability of taking up a nonfarm employment is higher for a farmer when he/she is very close to a city. In short as the city grows, agricultural labour is lost to other non agricultural activities.

SUMMARY AND CONCLUSION

This study had looked at the involvement of small scale farmers in nonfarm income generating activities in the south east region of Nigeria. Specifically it investigated the probability of farmers participating in nonfarm income generating activities. A Tobit model was used to analyse cross sectional data collected from 180 farmers selected by means of systematic random sampling technique. The result shows that on the average the farmers were aged 48 years and were characteristically smallholder farmers.

All the coefficients had the hypothesized signs in line with *apriori* expectations. Eight of the variables including age of the farmers, level of formal education, dependency ratio, remittance, farm size, size of farm income, farming status and distance to nearest city were statistically significant. The coefficients of age of the farmers, remittance, and farm size as well as size of farm income, farming status, and distance to nearest city are all negative. These imply that a unit decrease in age of the farmer, remittances, farm size of farm income, time spent on farming activities and distance to cities would bring about increased participation of farmers in nonfarm income generating activities.

It is the recommendation of this study that governments at all tiers in Nigeria should pursue rural development through provision of infrastructures so as diversify rural economy beyond only agriculture.

REFRENCE

Abdulai, A. and A. Crolerees (2001), "Determinants of Income Diversification amongst Rural Household in Southern Mali" Food Policy, Vol. 26, pp. 437-452.

Bagamba, F., K. Burger and A. Kuyvenhoven (2007), "Determinants of Smallholder Farmer Labour Allocation Decisions in Uganda" Paper presented in the EAAE seminar on Pro-Poor Development in low income countries: Food, agriculture, trade and environment. Montpellier, France.

Adesina, A.A. and A. Baidu-Forson (1995), Farmer's Perception and Adoption of new Agricultural Technology: Evidence from Analysis in Burkina Faso and Guinea, West Africa. *Agricultural Economics Journal,* 13: 1-19

Adesina, A.A. and M.M. Zinnah (1993), Technology Characteristics, Farmers Perception and Adoption Decisions: A Tobit Model Application in Sierra Leone, *Agricultural Economics Journal,* 9: 297-311

Brazil, L. and Bukenya, J.O. (2012), "Analysis of Non-Farm Employment Growth in Alabama", *American Journal of Experimental Agriculture*, 2(3): 288-305

Benjamin, C. and A. Kimhi (2003), "Farm Work, Off-Farm Work, and Hired Farm Labor: Estimating a Discrete - Choice Model of French Farm Couples' Labor Decisions." Discussion Paper No.5.03 May 2003.

Chukwuji, C.O. and O.D. Ogisi (2006), A Tobit Analysis of Fertilizer Adoption by Small Holder Cassava Farmers in Delta State, Nigeria, *Agricultural Journal,* 1 (4): 240-248

Eboh, E.C. (2009), Social and Economic Research: Principles and Methods. Enugu: African Institute for Applied Economics

Fernandez-Cornejo, J. and W.D. McBride (2000), Genetically Engineered Crops for Pest Management in US Agriculture: Farm Level Effects. (Agricultural Economic Report No. 786) Washington DC: Economic Research Service, United States Department of Agriculture.

Howard, W. and M. Swidinsky (2000), "Estimating the Off-Farm Labor Supply in Canada", Canadian Journal of Agricultural Economics, 48:1, pp. 1-14

Ike, P.C. (2011), "Small Scale Farmers' Technology Adoption and Soil Degradation in Enugu State, Nigeria", *Nigerian Journal of Farm Management*, 12(1):

Lynne, G.D., J.S. Shonkwiler and L.R. Rola (1998), Attitudes and Farmer Conservation Behaviour. *American Journal of Agricultural Economics*, 79: 12-19

Matshe, I. and T. Young (2004) "Off-farm labour allocation decisions in small-scale rural households in Zimbabwe." Agricultural Economics, 30(3):175-186.

McFadden, D. (1984), Econometric Analysis of Qualitative Response Models', in Griliches, Z.and M. Intriligator, (Eds), Hand Book of Econometrics. North Holland, Amsterdam, Vol. 2

Norris, P.E. and S.S. Batie (1987), Virginia Farmer's Soil Conservation Decisions: An Application of Tobit Analysis, *Southern Journal of Agricultural of Agricultural Economics* 14: 79-90.

Oladele, O.I. (2005), A Tobit Analysis of Propensity to Discontinue Adoption of Agricultural Technology among Farmers in South-western Nigeria, *Journal of Central European Agriculture,* 6: 249-254.

Ranis, G. and F. Stewart (1993), Rural Non Agricultural Activities in Development Theory and Application, *Journal of Development Economics*, 40: 175-201

Roslan, A. R and H. C. Smith (2011), "Determinants of Farmer's Participation in Off-Farm Employment: A Case Study in Kedah Darul Aman, Malaysia" *Asian Journal of Agriculture and Rural Development,* 1(2): 27-37

Reardon, T. (1997), "Using evidence of household income diversification to inform study of the rural non-farm labour market in Africa". *World development*, 25 (5): 735-747

Rosegrant, M.W. and P.B.R. Hazell (2000), Transforming the rural Asian Economy: The Unfinished Revolution.Hong Kong: Oxford University Press.

Table 1: Description of Variables and Expected Signs

Variables	Definitions	Expected sign
	DEPENDENT VARIABLE	
NFE(Nonfarm Employment	Participation in nonfarm employment (Binary) Yes = 1, No = 0	
	INDEPENDENT VARIABLE	
Age (X_1)	(Continuous) Age of household head in years	+
Gender (X_2)	(Dummy) Male = 1, Female = 0	+
Education (X_3)	(Continuous) Number of years spent in formal education by the household head	+
Household size (X_4)	(Continuous) Number in the household	+
Dependency ratio (X_5)	(Continuous)	+
Remittance (Transfer payments) (X_6)	(Continuous) Total income received from remittance	-
Farm size (X_7)	(Continuous) Measured in hectare	-
Size of farm income (X_8)	(Continuous) Ratio of farm income to total income of head of household	-
Farming status (X_9)	Full time = 1, Part time = 0	-
Distance to nearest city (X_{10})	(Continuous) Measured in kilometer	-
Farming experience	(Continuous) Number of years	-

Table 2: Summary Statistics of Basic Socioeconomic Characteristics of the Respondents (N = 180)

Variable	Mean	Standard Deviation	Minimum	Maximum
Age (Years)	48.6	5.82	28	67
Household size (No)	6	2.67	2	15
Formal Education (Years)	9.73	3.99	0	18
Farm size (Hectare)	1.78	1.56	0.45	5.30
Size of farm income (Naira)	93,572.00	10.79	50,000.00	351,000

Note: 1USD is equivalent to about ₦160 for 2014 average exchange rate.

Table 3: Estimated Tobit Model

Variable	Coefficient	Standard Error	t-ratios	Level of sig.
Constant	152.7426	19.3487	7.8942	0.000***
Age (X_1)	-2.0023	0.3795	-5.9870	0.000***
Gender (X_2)	4.5398	5.6064	0.8100	0.418
Level of formal education (X_3)	0.7221	0.4055	1.7810	0.042*
Household size (X_4)	6.2114	5.0079	1.2403	0.540
Dependency ratio (X_5)	3.2178	1.6231	1.9825	0.031**
Remittance (Transfer payments) (X_6)	-0.4000	0.1671	-2.3940	0.017**
Farm size (X_7)	-1.3562	0.2217	-6.1172	0.000***
Size of farm income (X_8)	-4.6923	0.3654	12.8415	0.000***
Farming status (X_9)	-0.0687	0.0053	-5.3640	0.000***
Distance to nearest city (X_{10})	-0.6571	0.1260	-5.2151	0.000***
Farming experience (X_{11})	-0.1032	0.0864	-1.1944	0.536

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