

Short Communication

Analysis of the effect of non-formal credit sources in enhancing the income of small scale rubber farmers in Edo State, Nigeria

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The effect of non-formal credit sources in enhancing the income of small-scale rubber farmers in Edo State were studied by purposive selection of ninety respondents drawn from rubber growing local government areas of Edo state. Data collected were analyzed using the production function to examine the influence of some variables on the income of respondents. Empirical result showed that 65% of variations in income of respondents were explained by age, farm size, access to credit, level of education and leadership role. The analysis indicated farm size (X_2) was positive and significantly related to income of the farmers while access to credit (X_3) and leadership role (X_5) were significant and inversely related to income of the rubber farmers. The study recommends that rubber farmers should form cooperative societies to enable them benefit from production credit from agricultural and commercial banks.

Key words: Income, non-formal credit, small-scale, production function, Edo state, Nigeria.

INTRODUCTION

Natural rubber tree belongs to the family of latex producing plant called *Euphorbiaceae*. The rubber tree is of the genus *Hevea* of which eleven species have been documented. Among these species, *Hevea brasiliensis* Muell Arg is the major source of natural rubber due principally to its superior latex yield over other species of *Hevea*. Natural rubber was introduced into Nigeria in 1895 from the Wick ham collection of 1876. To date, twenty-four high latex yielding clones have been developed in Nigeria. These clones have latex yield of 2000 – 3500 kg/ha/yr (Omokhafa and Nasiru, 2004).

Natural rubber was ranked as the fourth most valuable agricultural export commodity in Nigeria after cocoa, groundnut and palm kernel, with 92 percent of natural rubber production exported, making rubber essentially a foreign exchange earner for the national economy. It is a dependable source of raw material for local industries; it also provides employment opportunities for farmers, tappers, manufacturers and other personnel in marketing. Natural rubber has diversity of uses. Latex and coagula are important in automobile industries for the manufacture of tyres and tubes. Latex is useful in the

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manufacture of surgical gloves while the rubber seeds are processed into rubber seed oil and alkyd resins for industrial uses. Furthermore, rubber is environmentally friendly and helps to protect the soil from erosion (Abolagba and Giroh, 2006). Nigeria has 247,100 ha of land under rubber cultivation and majority of these hectares are owned by small-scale farmers (Aigbekaen et al., 2000; Delabarre and Serier, 2000)

Lack of credit facilities and high cost of credit are among the major constraints faced by rubber farmers in Nigeria. The rubber industry is dominated by small-scale rubber farmers who utilize about 85% of the rubber growing areas in the country. Production of natural rubber is concentrated in Edo State where about 90% of the country's output is obtained. Of this output, about 75% was from the small holdings. Most of the small-scale farmers having little or no access to credits may be because they are not organized into recognizable entities for the purposes of attracting such credit facilities. For rubber farmers, the situation is even worse because of the fact that rubber seedling and even budded stumps take about five to seven years to attain maturity. Because of this, no credit organization or commercial bank is normally willing to extend loan repayment for that length of time and farmers have to devise means of obtaining credit from non formal sources.

The low productivity which characterizes Nigeria agriculture stems in part, from the state of poverty of rural farmers which constitute about 80.78% of the Nigerian farmers (Ewuola, 1985). Farmers requirement for credit have direct implication on innovation. Most of the improved technologies (like hybrid seeds, chemicals etc.) extended to farmers demand that they have the means by which they will procure them. Credit will therefore facilitate innovation adopted by farmers, which will eventually lead to higher output from the agricultural sector (Abalu et al., 1981; Imoudu, 1986). Asika and Nwachukwu (1985) stated that credit is equally needed by farmers to expand their farm size, hire more labour to supplement the limited and fixed supply of farm labour, transporting inputs to the farm and evacuating of farm produce to the market and stores and for processing of produce to other forms desired by the people. In fact, credit to farmers would ensure reduction in produce spoilage and wastage.

The objective of this study is to determine the effect of non-formal credit on income of small-scale rubber farmers in Edo State.

METHODOLOGY

The study area

The study was conducted in Edo State, Nigeria. Edo State lies between Latitudes 5° 44'' and 7° 34'' N of the equator and between Longitudes 5° 04'' and 6° 43'' E of the Greenwich Meridian. It shares boundary with Kogi State in the south by Delta State, in the West by Ondo State and in the East by Kogi and Anambra States.

The state covers a land area of about 17,902 km² with a population of 2,159,848. Edo State is divided into 18 Local Government Areas. The State is characterized by a tropical climate which ranges from humid to sub humid at different parts of the year. Three distinct vegetation identified in the State are Mangrove forest, Fresh swamp and Savannah vegetations. The mean annual rainfall in the northern part is 127 to 152 cm while the southern part of the State receives about 252 to 254 cm respectively. Mean temperature in the state ranges from a minimum of 24°C to a maximum of 33°C. The people of the state are mostly farmers growing varieties of crops such as cassava, rice, yam, plantain, pineapple and tree crops such as rubber, oil palm and cocoa. Other occupations of the state include small and medium scale businesses and jobs done by artisans and civil servants who engage in farming on part time basis (Emokaro and Erhabor, 2006).

Data collection procedure and analysis

The multi-stage sampling procedure was used to select the respondents. Six Local Government Areas (LGAs) that are dominantly noted for rubber production in the state were purposively selected. Twenty (20) rubber farmers were randomly selected in each of the six local governments which gave a sample size of one hundred and twenty (120) small scale rubber farmers in the study area and served with structured and validated questionnaire consisting of open and closed – ended questions to elicit information from the targeted respondents. Out of the number 90 were correctly filled and used for analysis. The production function postulated for rubber farmers in the study area is implicitly presented by Equation (1)

$$Y = F(X_1, X_2, X_3, X_4, X_5, \mu_1) \quad (1)$$

Where: Y = Farm income per annum in Naira; X₁ = Age of the farmers (years); X₂ = Farm size (hectares); X₃ = Access to credit (N); X₄ = Educational attainment; X₅ = Leadership role and μ_1 = The error term (was assumed to have zero mean and constant variance).

The Linear, Semi-log, Exponential and Cobb-Douglas functional forms were tried using ordinary least square technique (OLS). The estimated functions were evaluated in terms of the statistical significance of R² as indicated by F-value, the significance of the coefficients as given by the t-values, the signs of the coefficient and the magnitude of standard errors. Based on these statistical, economic and econometric criteria, semi log functional form was selected as the lead equation which is explicitly represented by Equation (2):

$$Y = \log \beta_0 + \log \beta_1 X_1 + \log \beta_2 X_2 + \beta_3 X_3 + \log \beta_4 X_4 + \log \beta_5 X_5 \quad (2)$$

Where: β_0 = A constant, $\beta_1, \beta_2, \dots, \beta_3$ are regression coefficients to be estimated while other variables are as previously defined.

RESULTS AND DISCUSSION

The sources used by the farmers were non-formal sources which include Esusu, money lenders and private savings. Disbursements to borrowers were timely unlike the formal credit institutions (Agricultural Cooperative and Rural Development Bank (NACRDB), Cooperative and Commercial Banks, like First Bank, Union Bank etc) that are usually marred by bureaucratic delays, collateral security and untimeliness in release of fund.

Table 1. Influence of selected variables on the income of respondents.

Variable code	Variable name	Coefficients	Standard error	T-value
	Constant	19716.930	44859.757	0.440
X ₁	Age of Respondents in years	22024.095	26110.062	0.844
X ₂	Farm size of respondents in hectares	133247.6***	15537.080	8.576
X ₃	Access to credit by the respondents in Naira	-60365.5***	18851.600	-3.202
X ₄	Educational attainment of respondents measured by the number of years of formal schooling	-5472.461	10327.799	-0.530
X ₅	Leadership role of respondents	-19721.2*	9387.045	-2.101

Source: Data analysis 2007, R² = 0.666, Adjusted R² = 0.646, F-value = 34.243 *** ,***, * Indicate Significance at 1and 5%.

Result of the analysis, Table 1, shows that the coefficient of multiple determination (R²) was 0.646 (about 65%) which implied that 65% of the variation in the income of rubber farmers explained the variables included in the model. The difference (35%) may be attributed to error and non inclusion of other variables in the model. The entire model is well fitted to the data as evidenced by F value of 34.243 and significant (p>0.01).

The result indicated that farm size (X₂), access to credit (X₃) and leadership role (X₅) were significant, which implies that a unit increase in farm size will increase the farmers income *ceteris paribus*. The coefficient for farm size (X₂) was positive and significantly related to income of the farmers. This shows that land is a critical factor in production and adoption of improved farm practices and can be used as a collateral security in obtaining credit from formal sources. Access to credit (X₃) is significant and inversely related to income of the Nigerian rubber farmers. This implies that farmers may refuse to borrow or were not opportune to obtain credit as the case may be. So any unit increase in the independent variable (X₃) access to credit, the income of the farmer will decrease equal to the value of the coefficient of the variable. Leadership role (X₅) was also significant but negative, this may be possible because leaders are not using the opportunity they had in obtaining loan to invest on their farms, rather give more time to their functions in the society like attending meetings, settling cases and also pride of leadership and also underrating farm work as a business.

CONCLUSION AND RECOMMENDATIONS

The study has identified factors that enhance the income of small scale rubber farmers in Edo State. The factors were age, educational attainment, access to credit, leadership role and farm size. Based on the findings of

the study, it is hereby recommended that in order to enhance access to agricultural loan to farmers, it is recommended that farmers should join cooperatives so as to reap other benefits such as easier access to other farm inputs, possible reduction in cost of production, learning of improved farm practices and increased bargaining.

Conflict of Interest

The authors have not declared any conflict of interest.

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