

Counter Urbanization and Agricultural Input Productivity in Imo State of Nigeria

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Abstract

This study analyzed the productivity of agricultural inputs in the context of counter-urbanization, a consequence of Nigeria's fiscal policy reform, in Okigwe Local Government Area (L.G.A) of Imo State, Nigeria. Sixty counter-urbanities who settled for farming were randomly selected from four autonomous communities in the L. G. A for the study. Sources of primary data were structured questionnaires, market survey, interviews and observation of farm activities. Descriptive statistics, multiple regression and gross margin analyses were tools employed in data analysis.

Results show that counter-urbanization has accelerated agricultural intensification and cultivation of marginal lands. Population density is significant and inversely related to output, while farm size, fertilizer application and fallow length were directly related to output. Labour and cropping density have not significantly affected output. The marginal values of the variable inputs were measures of their efficiency usage. The average farm size, and output per hectare are less than those of non-migrants recorded six years ago. Major sources of farmland were leasing and borrowing as opposed to inheritance. The study recommended among others provision of credit facilities for non-farm sectors to reduce the number of return migrants engaged in farming.

Keywords: counter-urbanization, agriculture, input productivity, Nigeria

1 Introduction

The movement of people from regions of higher concentration to regions of lower concentration or the movement of people from 'urban cities' to 'rural areas' is termed Counter-Urbanization, Return Migration, or Urban-Rural Migration (BERRY, 1976; CHAMPION, 1989). It could be seen as government policy to achieve equitable distribution of population, reduction of urban unemployment and alleviation of poverty. This is mostly recognized when government creates incentives that attract people to rural areas (PAUL, 1992). Nigeria as one of the developing countries of Sub-Saharan Africa had depended on agriculture as a major source of food products, raw materials as well as earning foreign exchange. These needs were met by mainly subsistence farmers who made up to 85 percent of the population before the oil boom when agriculture contributed up to 80 percent of the country's total export (EKANONE, 1993). Agriculture at that time was

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characterized by scarce capital inputs high labour supply, abundant land and simple tools (OSUGIRI, 1996). All those who can put up with its labour demand enjoyed lucrative and extensive production.

The discovery of crude petroleum and its boom led Nigerians to misplace priority to the detriment of agriculture as there was massive importation of food products and raw materials which subsistence farmers have been producing. Nigerians' taste favoured imported agricultural products which started competing effectively with local alternatives. Consequently, there was no market for the local agricultural products. Rural-urban migration ensued, and urban population and unemployment increased dramatically.

The disappearance of the oil boom syndrome made it difficult for the country to maintain high-level importation of food to feed the rapidly growing population (SOLUDO, 1995). To halt the increasing debt that government is incurring in its efforts to satisfy the consumption pattern which had been developed during the oil boom era, the structural adjustment programme (SAP) was launched in 1986. The implementation of SAP affected the socio-economic, technological and ecological environment of the country. For instance, the massive retrenchment of workers - a fiscal policy measure aimed at reducing the labour force in the formal sector - as well as government reluctance to increase wages to match the inflationary trend resulted in poverty becoming the hallmark of the economy. Consequently, to avoid being crushed by the receding economy, counter-urbanization process began.

Counter urbanization increases agricultural intensification and reduces input productivity in areas of limited land space and traditional farm practices. Undue population pressure on limited arable land adversely affects its resource base and reduces input productivity because agricultural intensification without adequate soil management and conservation techniques can lead to low input productivity (BOSERUP, 1965; UDO, 1975; OKAFOR, 1982). Increasing food production to keep pace with its demand while retaining the quality of ecological balance of production systems is a major challenge to agricultural researchers and policy makers. Efforts made by this category of personnel to achieve the above objectives in Imo state have not been successful (OSUGIRI, 1996). Perhaps, this is due to the poor state of the economy or limited land available for agricultural production and problems of high population density as well as that of the land tenure system. Analysis along this direction have been limited to a series of disputable generalization without consistent objective support and this constitute a barrier to quick decision making (ARENE, 1996).

Increased food production is better pursued with intensification options accompanied by appropriate soil conservation techniques because land is a fixed factor of production. The study of indirect effects of the fiscal policy reforms on agricultural resource base of the economy is more pronounced when concentration is put on counter-urbanites who settled for farming. In view of the foregoing, this study aimed at describing the indicators of counter-urbanization and agricultural production systems in Okigwe Local Government Area (L. G. A) of Imo state in Nigeria. It further analyzed the productivity of these indicators and computed the trend in profitability of agricultural production in the area within the reform period.

2 Methodology

2.1 The Study Area

The study was conducted in Okigwe L. G. A of Imo State, Nigeria. Okigwe L.G.A lies between latitude 5.45 North and Longitude 7.15 East. Okigwe L. G. A has a land mass of 326km² and total population of 93,911 (NPC-FOS, 2000). The choice of the area is based on its high population density which has resulted in land pressure (OSUGIRI, 1996).

2.2 Sampling Procedure and Data Collection

A two-staged random sampling technique without replacement was used. First was the selection of four autonomous rural communities namely: Ezinachi, Ogi, Umulolo and Umuwaibu, based on their high population densities. Second was the random selection of fifteen counter-urbanites who settled for farming from each of the four autonomous communities giving a total of sixty farmer respondents.

Data were collected from both primary and secondary sources; primary data were obtained by the use of structured questionnaires on a random survey among the return migrants. Oral interviews, observations of farm activities and a market survey were conducted. These took place between July and October 2000. Information collected includes reasons for return migration, farmland acquisition, farm practices, cropping pattern, prices and other personal data. Secondary data were collected from relevant literature, reports, published and unpublished materials available in relevant ministries and libraries.

2.3 Analytical Techniques

Descriptive statistics, multiple regression, and gross margin analysis were tools employed in data analysis.

The null hypothesis that there is no significant effect of counter-urbanization indicators on agricultural productivity was tested using multiple regressions whose explicit form is given below:

$$Y = a + b_1 \log X_1 + b_2 \log X_2 + b_3 \log X_3 + b_4 \log X_4 + b_5 \log X_5 + b_6 \log X_6 + e$$

Where:

Y = agricultural output in kg

X_1 = population density (No of persons per square kilometer)

X_2 = farm size (in hectares)

X_3 = cropping density (No of crops-stand per hectare)

X_4 = cultivation intensity (length of fallow periods in years)

X_5 = labour used (in man days)

X_6 = fertilizer application (dummy variable, 1 for use; else 0)

a = intercept

b_i = elasticity of response of the X_i th variable factors

e = stochastic error term with Ordinary Least Square (OLS) properties

Gross margin per hectare was used to estimate the trend in the profitability of agricultural production in the area using the results from Osugiri study in 1996 and the present study. Gross margin(GM) per hectare is given as:

$$Gross\ margin(GM) = \frac{Total\ Revenue(TR) - Total\ variable(TV)\ (all\ in\ Naira)}{Farm\ Size(FS)\ (in\ hectares)}$$

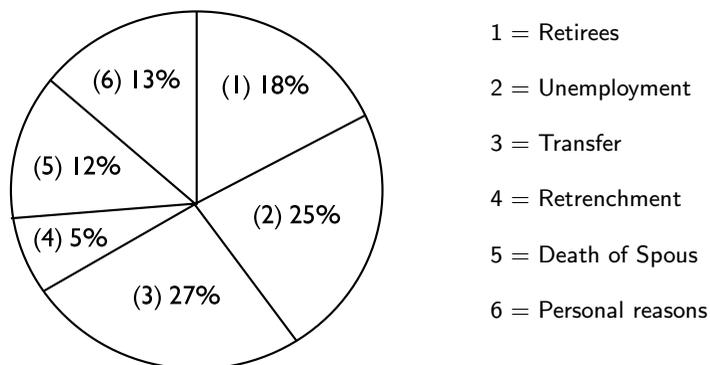
The revenue items include quantity of crops sold, quantity consumed and quantity given away, while the variable cost items include hired labour, fertilizers, pesticides and planting materials.

3 Results and Discussion

3.1 Descriptive Statistic Results

The survey indicated that 18 percent of the counter-urbanites were retirees, 25 percent were unemployed, 27 percent were on transfer, 5 percent were retrenched, death of spouse caused 12 percent to return and 13 percent held their reasons confidential. This supports the fact that SAP as well as government effort to cushion it are the major causes of counter-urbanization. The reasons for their return are illustrated in figure 1.

Figure 1: A Pie chart showing the percentage distribution of respondents according to their reasons for urban-to-rural migration.

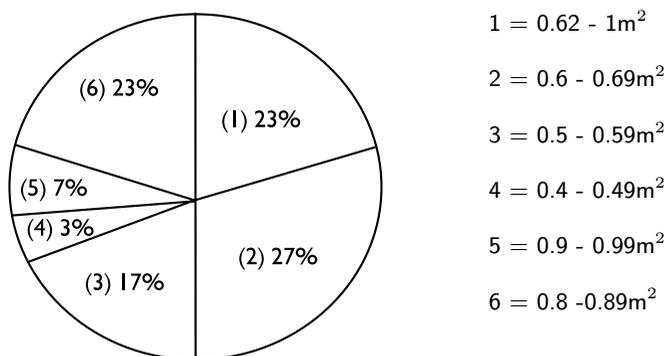


Source: Field Data 2000

This study also ascertains that communal land ownership where land is jointly owned by the community and allotted to members according to needs is not practiced. The present land tenure arrangement allows for family and individual ownership. Under family ownership, group of families having one ancestral lineage can own land called "compound land" or "family land". This group of land is usually the largest plot and is not frequently divided among families but is commonly used by family members, systematically. Individual land ownership is a result of families dividing their land among the male members. Such division is usually practiced within 20-30 years during which, females are not given any title to land. This leads to land fragmentation which poses problems to farm mechanization. It has been demonstrated by OSUGIRI (1996) that 93.3 percent of average rural dwellers in Imo state has access to farmland through

inheritance, while 3.558ha and 2.263ha represent their average land holding and farm size, respectively. This survey shows that only 30 percent of the counter-urbanites have access to land through inheritance, while 1.975ha and 1.4ha represent their average land holding and farm size respectively. The average planting distance of cassava in a mixture of cassava/maize inter-crop is 1m by 0.62m which gives a cropping density of 16,129 plants per hectare. This is less than the recommended density and it did not significantly affect productivity (fig. 2). It was demonstrated that increasing cropping density up to the recommended density has significantly decreased crop output in the area even at one percent probability level (OSUGIRI, 1996).

Figure 2: A pie chart illustrating the distribution of respondents according to their estimated planting distance of cassava in cassava/maize inter-crop.



Source: Field Data, 2000

The study found that 4.7 percent of the counter-urbanites operate on farm land with fallow length of 2-2.5 years while 52 percent allow 3-3.5 years of fallow, and 42 percent allow 4-4.5 years of fallow. An important aspect of integrated soil management techniques is the joint application of organic and inorganic fertilizers. The organic manure helps to replace the quantity lost from the bush fallow system due to slash and burn. The organic manure is necessary to buffer the Cation Exchange Capacity (CEC) of the soil and it reduces loss of nutrients by leaching. It also releases its nutrients gradually over time due to its carbon-nitrogen (C/N) ratio. The average quantity of organic and inorganic fertilizers used by farmers in this survey is 216kg and 37.5kg respectively while, the average quantity of inorganic fertilizer used in 1996, according to Osugiri study, was 27.92g. This study found that such practice has positively and significantly affected output. Intensive farming is accompanied by high labour inputs. Man-days of labour used in Okigwe and other parts of Imo State varies from 6-7 hours. The study found that marginal labour productivity is almost zero. This may be due to cultivation intensity in limited land space causing reduction in soil fertility. Low labour productivity may also be attributed to other factors such as attack of pests and diseases, erosion problems as well as lack of adequate fertilizer application. The average man-days of labour used per hectare in 1996 and 2000 are 65 and 86 respectively.

3.2 Regression Analysis Results

The regression Analysis Results show that:

$$Y = 331900 - \ln 593.05X_1 + \ln 12779X_2 + \ln 579.3X_3 + \ln 4350.7X_4 + \ln 878.53X_5 + \ln 1427.1X_6$$

$$SE = (190070) \quad (34.325) \quad (1927.4) \quad (936.61) \quad (2520.6) \quad (1214.6) \quad (790.04)$$

$$t = (1.746)^* \quad (1.728)^* \quad (6.638)** \quad (0.619) \quad (1.726)^* \quad (0.723) \quad (1.806)$$

F = 11.84**, R² = 67, df = 59

SE = standard error, t=t-statistics, df= degree of freedom

** and * = statistically significant at 1% and 10% probability levels, respectively

Source: computed from field survey 2000

The regression results revealed population density is inversely related to agricultural output, while farm size, fertilizer-use and cultivation intensity have a direct effect. Cropping density and labour-use account for less. The results, therefore, indicate the need for increased cultivation intensity and fertilizer-use as such measure could in turn, increase labour productivity in the face of possible future land constraints emanating from worsening human/land ratios.

3.3 Gross Margin Analysis Result

An output of 9700kg of crops with a gross margin per hectare of N23,520.00 was reported by OSUGIRI (1996). This study revealed an output of 9376kg with a gross margin per hectare of N21,339.00, indicating a decreasing trend in profitability of agricultural production resulting from increasing production costs in the area.

4 Conclusion and Recommendations for Policy

The cropping pattern prevalent in the area is inter-cropping of cassava and maize. The average yield per hectare of crops is 9376.7kg against 9700kg recorded in 1996. The major sources of land holdings to counter-urbanites are pledging and borrowing and these often lack security of tenure. Gross Margin analysis shows that farming is still profitable in the area even though the marginal productivity of labour is almost zero. Independent variables such as population density, farm size, fertilizer-use and cultivation intensity significantly affected output in the area.

The findings and results showed that increased pressure on land has resulted in agricultural intensification and reduction in output. Consequently, the following recommendations are made:

- (1) Government should stop embarking on such policies that could result in counter-urbanization, and should rather engage in investments aimed at generating gainful employment for urbanites;
- (2) The provision of credit facilities to bonafide beneficiaries in rural areas should be encouraged so that more individuals could be self employed in other sectors of the rural economy rather than subsisting on farming alone.

- (3) Government should provide incentives geared towards providing markets in the rural areas, such that investment in farm and non-farm sectors will be lucrative as this will motivate the majority who do not have access to enough farm land to engage fully in non-farm economic activities, while those who have such access will continue farming. This is a possible diversification strategy for the rural economy.
- (4) Agricultural Development Programmes (ADPs) should intensify their extension activities focussing on encouraging farmers to adopt sustainable agricultural practices aimed at environmental conservation and higher input productivity.

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