

## **Empirical Analysis of Agricultural Growth and Unemployment in Nigeria**

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### **Abstract**

Unemployment which has been identified as the major cause of poverty is a worldwide economic problem. Poverty alleviation has been a great concern to developing countries. The economic burden of unemployment on a society necessitates this study. Consequently, this study analyses the Nigerian agricultural growth rate, its contributions, and examines the linkage and dimension of agricultural growth and unemployment rates. Collected time series data were analyzed with the aid of *t* – test, Duncan Multiple Range test, Granger Causality test and regression analysis. Results showed that Nigerian agricultural growth rate has an inverse relationship with unemployment and re – establish the Cobweb supply theory. In addition, increase in agricultural growth decrease unemployment and thus can alleviate poverty. Consequently, recommending polices to alleviate poverty should focus on increasing agricultural growth.

Keywords: Cobweb supply theory, Granger Causality test, Nigeria, Unemployment,

### **Introduction**

Unemployment brings about economic waste and causes human suffering (Lipsey, 1963). The contribution and attitude of this economic waste were due to the fact that the factor services are the least durable economic commodity. Fadayomi (1992) emphasized that unemployment is as a result of the inability a nation to develop and utilize its manpower resources effectively especially in the rural sector. The negative consequences of unemployment include poverty, psychological problems of frustration, depression, hostility, suspiciousness of people, food insecurity, all manner of criminal behaviour and general insecurity of life and property (Adebayo 1999; Egbuna 2001). Although Nigeria is known to be rich in manpower; all these problems are still very pronounced in the nation. A country's labour force is a set of people who are willing and are able to make available at any given point in time their efforts for gainful employment (Feyisetan, 1991). The unemployed are the individuals with no work but are looking for work at the time of survey. In the study of unemployment in Africa, Philip and John (1973) identified three causes of unemployment as the educational system, the choice of technology which can either be labour intensive or capital intensive and inadequate attention to agriculture. Agriculture was until the oil discovery, the highest foreign exchange earner. This emphasizes its preeminence in the

Nigerian national economy. In Nigeria, farming still remains the major source of employment of the bulk of the adult population (Olatunji, 2002). Its productivity is the most important single factor influencing the standard of living of both the rural and urban centers (Yusuf, 2002). Although Nigeria has more natural resources than most of her neighboring countries, this unemployment problem is still a major problem (Olatunji, 2002). The menace of this unemployment has been recognised as one of the socio-economic problems currently facing many counties Africa (Curtain, 2000). Hence, this study does not only seek to know if there is linkage between the Nigerian agricultural growth and unemployment but also to ascertain the impact of agricultural growth rate in alleviating unemployment among urban and rural dwellers. The specific objectives of the research are to: examine the trend of national unemployment rates in the urban and rural areas of the economy; examine the dimension and linkage between Nigerian agricultural growth rate and unemployment.

### **Methodology**

The study area is Nigeria. The sets of data used in this research were the time series data obtained from annual abstracts of statistics of the Nigerian Federal Office of Statistics (FOS) and the Central Bank of Nigeria (CBN). The collected data are on agricultural growth rates, national unemployment, rural unemployment and urban unemployment in Nigeria

between 1983 – 2003. The paired t-test, Duncan Multiple Range test, Granger Causality test and regression analysis are used to analyze the data. The paired t – test was used to ascertain whether there exist significant difference between unemployment rates of rural and urban areas. The Duncan Multiple Range test was used to establish whether there exist significant differences in the growth rates of the Nigerian major economic sectors (agriculture, industry and the oil sector). In order to determine whether one variable (say, agricultural growth rate) causes the other (say, unemployment) or vice versa, the Granger causality test was used. It examines the dimension and the linkage between agriculture growth rate and unemployment. The Granger causality model with two time series ( $y_t$ ) and ( $x_t$ ) is expressed as

$$y_t = \sum_{i=1}^k \alpha_i y_{t-i} + \sum_{i=1}^k \beta_i x_{t-i} + u_t$$

Then if  $\beta_i = 0$  ( $i = 1, 2, \dots, k$ ),  $x_t$  fail to cause  $y_t$ .

The lag length  $k$  is, to some extent, arbitrary Maddala (2002). In this study  $k = 4$ .

In order to make the conclusions and policy deduction more deterministic, a regression model is fitted with lag variables. Depending on the outcome of the Granger causality tests, the bivariate model in its explicit form is given as:

$$y_t = \beta_0 + \beta_1 x_t + \beta_2 x_{t-1} + \beta_3 y_{t-1} + u_t$$

Where  $y_t$  = dependent variable identified by the causality model

$x_t$  = independent variable identified by the causality model

$y_{t-1}$ ,  $x_{t-1}$  = lag dependent and independent variables; and

$u_t$  = disequilibrium term

### Result and Discussion

It was revealed that unemployment rate is generally higher in the urban areas than in rural areas (Appendix 1). This may be as a result of rural – urban migration and various organizations laying off their members of staff for them to become more computerized and mechanized. In the rural area, the rate of unemployment was found to decrease from 1985 to 1986 and then increased in 1987. From 1987, it started to decrease till 1995. This depletes that people in the rural areas were increasingly employed in the time

range of 1987-1995. From 1996 till date unemployment rates have not been steady as it fluctuates year in year out. In the urban area, unemployment rate has no definite pattern (Appendix 1). Results further revealed a significant difference between the rate of unemployment in both rural and urban areas. These Nigerian real sectors recorded modest growth in 2003 with the Gross Domestic Product (GDP) at 1990 constant prices of N392.76 billion to 10.24 percent growth rate which is higher than that of previous years (Appendix 1). Results also indicate that the agricultural sub-sector has the highest contribution to the Nigerian economy (GDP) over the years when compared to the other two sectors considered. The Duncan multiple test shows that there is a significant difference between growth rate of the agricultural, manufacturing (industry] and the crude oil sectors in their contributions to the Gross Domestic Product of the country. The Granger causality test carried out shows that there is a unidirectional causation between agricultural growth and national unemployment, and between urban unemployment and agricultural growth (table 1). The direction of causation of agricultural growth causing national unemployment can be seen in the fact that increase in agricultural production in excess of demand creates a glut. This, in the subsequent production year, results into laying off of workers. This explains and re-establishes the cobweb supply theory. The explanation of urban unemployment causing agricultural growth shows that when people are laid off from their industrial work or jobs, they tend to go back to agricultural production to earn a living and for survival. Since the Granger Causality test reveals only the linkage and direction of the linkage and that no relationship between the pairs is established, this is remedied with the regression result in table II. This result shows that an increase in national unemployment (YAT) by a unit results from a decrease in agriculture growth by 0.152 percent. This relationship reveals that when agricultural growth decreases, it brings about increase in national unemployment. Furthermore, the coefficient of urban unemployment (YU) is positive. This implies that urban unemployment is positively correlated with agricultural growth. Thus, an increase in urban unemployment will boost agricultural growth.

### Conclusion

Based on this research, unemployment in Nigeria can be alleviated in years to come. It can also be argued

that continuous improvement in the agricultural sector of the economy is the surest way to break the vicious cycle of the unemployment menace, thus in turn alleviates poverty. Agricultural growth, though found to be inversely related to national unemployment, can also be improved such that the cobweb supply theory will not be realized. For unemployment rate in Nigeria to be curbed, there must be a definite and concrete sustained intervention in agricultural production in order not to allow this menace to persist. Consequently, attempt to alleviate poverty should focus on increasing agricultural growth.

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Table 1. Granger Causality Tests

Real sectors and unemployment	F- Statistics	Probability	Remarks
National unemployment (YAT) → Agricultural growth (XAT)	2.097	0.215	Reject
Agricultural growth (XAT) → National unemployment (YAT)	3.603	0.068	Accept
Rural unemployment (YR) → agricultural growth (XAT)	3.675	0.112	Reject
Agricultural growth (XAT) → rural unemployment (YR)	2.209	0.199	Reject
Urban unemployment (YU) → agricultural growth (XAT)	15.510	0.04	Accept
Agricultural growth (XAT) → urban unemployment (YU)	2.190	0.178	Reject

Note: The relationships are established at 10 percent significance level

Table 2. Regression Results

Variables	National unemployment (YAT)	Agricultural growth (XAT)
Constant	1.059** (1.827)	-1.608 (-0.663)
Agriculture growth (XAT)	-0.152** (-2.116)	
XAT <sub>t-1</sub>	0.06517 (1.413)	
YAT <sub>t-1</sub>	0.759* (4.715)	
Urban unemployment (YU)		1.476* (3.575)
YU <sub>t-1</sub>		-0.226 (-0.518)
XAT <sub>t-1</sub>		-0346 (-1.535)
Adjusted R <sup>2</sup>	0.640	0.396
F- Statistic	10.495	4.927

\* 5% significant level: \*\* 10% significant level, value of the t-statistic are shown in the parenthesis