

EMPIRICAL ANALYSIS OF POVERTY AND AGRICULTURAL GROWTH IN NIGERIA

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ABSTRACT

Poverty alleviation has been a great concern to developing countries. Agriculture was known to be a major contributor to national development, but suffering from neglect that has led the country to heart aching poverty. This study analyses the trend of Nigerian agricultural growth rate overtime, trend of Nigerian poverty rate overtime and examines the linkage and dimension of agricultural growth and poverty rate. Collected time series data were analysed with the aid of ARIMA model and Granger Causality test. Result showed that there were variation in the trend pattern of agricultural growth and poverty rate. Poverty rate has direct relationship with agricultural growth. That is, increase in poverty rate causes increase in agricultural growth. Consequently, relevant policies aiming at alleviating poverty should be focused on increasing agricultural growth.

Keywords: ARIMA model, Granger Causality test, poverty, unemployment

INTRODUCTION

In Africa, the incidence of poverty has been increasing significantly for many years. For instance, it is documented that the number of poor increased by about two-third between 1970 and 1985, and rose from 180million (47% of the population) in 1985 to 265million by the year 2000 (Aluyo, 2000). Nigeria is the most populous country in Africa and the eight in the world with a population of over 140 million people by 2006 census. The recent rebasing exercise by Nigeria's National Bureau of Statistics, supervised and validated by the World Bank, International Monetary Fund, and African Development Bank, shows GDP of \$454 billion in 2012 and \$510 billion in 2013 (compared with the \$259 billion and \$270 billion that were reported previously), confirming Nigeria as the largest economy in Africa (Leke, 2014). The share of the total population living below the \$1 a day on the threshold of 46 per cent is higher today than in the 1980s and 1990s, despite significant improvements in the growth of GDP in recent years (Aiyedogbon and Ohwofasa, 2012). Although Nigeria depends largely on the oil industry for its

budgetary revenue, it is still predominantly an agrarian. As the main stay of the Nigerian economy, agriculture is the main source of food for most of the population, providing means of livelihood for over 70% of the population and a major source of raw materials for the agro-allied industries (Okumadewa 1997, World Bank 1998). The agricultural sector accounts for 47 per cent of gainful employment in 2005 with 41 per cent of the share of GDP as against much higher figures in the 1960s and early 1970s prior to the oil boom. In terms of agriculture's contribution to Gross Domestic Product (GDP), the percentage has declined tremendously from about 55% in 1996 to 17% in 2004, thus leading to its decline in contributing to national development (Okuneye, 2002, World Bank, 2006). The socio-economic and production characteristics of the farmers in conjunction with unfocused government policies and poor infrastructural base, all interact in affecting production in the agricultural sector, thus resulting in low production, high prices of food items underdevelopment and concomitant poverty in the country (Okuneye, 2002). The neglect of the agricultural sector and the dependence of Nigeria on a mono-cultural, crude oil – based economy have not augured well for the well-being of the Nigeria economy. In an attempt to correct this trend, the civilian administration in the period 1999-2007 desired to restore the sector to its pre-oil boom era pre-eminence by anchoring its poverty alleviation programme on the revival of agriculture. Nigeria has embarked on several strategies which include National Poverty Eradication Programme (NAPEP), National Economic Empowerment and Development Strategy (NEEDS), VISION 2010, and the newly introduced Financial System Strategy (FSS) 20:2020 and Subsidy Re-investment Programme (Sure-P). Yet, regardless of these strategies and despite NEEDS targeted poverty reduction at 5 per cent yearly from 2003 through 2007, NBS (2011) reports showed that 93.9 per cent Nigerians are poor as the country's poverty rate stood at 69 per cent in 2010 reflecting that the figure was higher than the 54 per cent recorded in 2004. Meanwhile, the World Bank Development Report (2000/2001) opines that the Nigerian figure for the GDP share of agricultural sector is quite on the high side when compared with the average of 27 per cent for low-income nations, or the average of 18 per cent for sub-Saharan Africa. However, according to Iwayemi (2012), there is declining wellbeing and rising poverty level as the impressive and sustained growth has failed to translate into poverty reduction, inclusive growth and development. Essentially, the significance of this study is also based on the desire of Nigeria to effectively combat poverty with a view to lift the country from poverty. Thus, despite the various poverty alleviation strategies that have been introduced and implemented, there is need for a policy measure that will aim at improving the living standard of the people and improve the growth rate of

per capita income for poverty reduction. Hence, this study does not only seek to know the linkage between the Nigerian poverty rate and agricultural growth but also to ascertain the impact of poverty rate on agricultural growth. The specific objectives of this research are to: examine the trend of poverty rate and agricultural growth in Nigeria; examine the dimension and linkage between poverty rate and agricultural growth in Nigeria.

Methodology

The study area is Nigeria. The set of data used in this research were time series data obtained from National Bureau of Statistics, annual abstract of statistics of the Nigeria office of statistics (FOS), Central Bank of Nigeria, IMF publications and United Nations Publications. the collected data are on agricultural growth and poverty rate in Nigeria during the period of 1980-2011. The ARIMA model and Granger Causality test are used to analyze the data. The ARIMA model was used to analyze the trend of poverty rate and agricultural growth over years. The Granger causality test was used to determine whether one variable (say, poverty rate) causes the other (say, agricultural growth). It examines the dimension and linkage poverty rate and agricultural growth. The Granger causality with the two time series (y_t) and (x_t) is expressed as

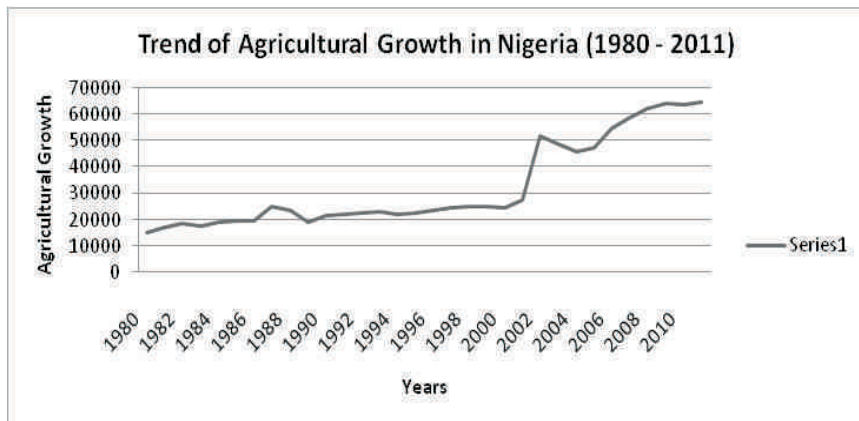
$$Y_t = \sum_{i=1}^k \alpha_i y_{t-i} + \sum_{i=1}^k \beta_i x_{t-i} + u_t$$

Results and Discussion

Trend of agricultural growth in Nigeria

The trend in the share of agricultural GDP shows a substantial variation from 22.2 percent in the 1980s and 26 percent in 2000. Unstable and often inappropriate economic policies (of pricing, trade and exchange rate), the relative neglect of the sector and the negative impact of the oil boom were also important factors responsible for the decline in its contribution. In a bid to mitigate the negative growth effect of the agriculture, manufacturing and oil sectors, the government introduced Structural Adjustment Programme (SAP) in 1986. During the period 2000 to 2008, the percentage growth of the agriculture sector increased by 4.57 percent. Although there was positive growth from the sector's contribution to the GDP over the years, much which is corroborated by Suleiman and Aminu (2010); *more financial effort and adequate policies aimed at adequate financing of agricultural sector by government in order to boost its output, may result into a way forward (Aminu and Anono 2012)*

Figure 1: Trend of agricultural growth in Nigeria (1980-2011)



Trend of poverty rate

This section gives the trend of poverty rate during the period considered. In Table (2), the lowest poverty rate during the year studied was recorded as 28.1% in 1980 and the highest poverty rate was experienced in 2002 with 88%. Since the mid 1980s the rate of poverty in Nigeria has been on the increase. For instance, in 1982 the rate was 35.5% and by 1996 it has risen to about 65.6%. Some of the probable reasons behind this persistent increase include among others; the effects of the global economic crisis witnessed in the early 1980s, the negative effects of Structural Adjustment Programme (SAP) introduced in 1986, political instability, bad governance, corruption, and the collapse of public infrastructures (Aikoye, 1994; Faruquee, 1994). 54.7% Nigerians were living in poverty in 2004 but this increased to 60.9% in 2010. The incident of poverty in Nigeria increased from 28.1% in 1980 to 88% the year 2002. This rate represents in absolute term 86million people out of an estimated population of about 116.4million people. The poverty situation in Nigeria also depicts regional variation. For example, within these periods the poverty was higher in the northern agro. climatic zone at 40% compared with the middle and southern zones at 38% and 24% respectively, (Francis *et al.*, 1996; FOS various issues).

Similarly, Nigeria's rank in the Human Development Index in the year 2008 remained low (0.470), being the 158th among 182 countries (ADB 2010). The use of socio-economic indicators like per capital income, life expectancy at

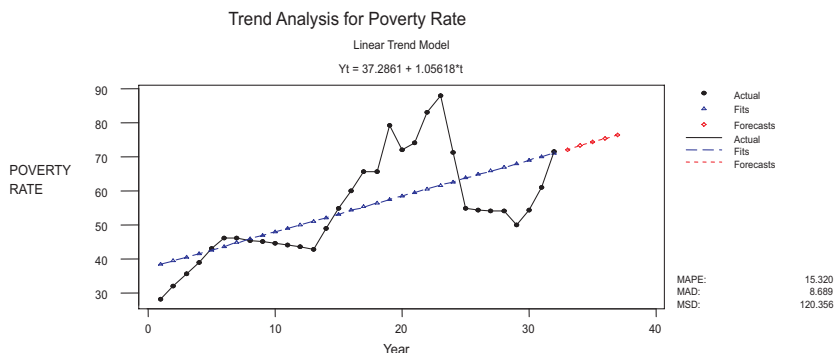
birth(year), access to health care services, access to safe water, access to education, access to sanitation facilities, and electricity also depict the extent of poverty in Nigeria. For instance, apart from the early 1980s when the nation's per capita income witnessed an increase, the situations in the 1990's and early 2000 were pathetic. Remarkable reduction when viewed from these indicators and compared with some countries in Africa shows that the rate of poverty in Nigeria has not shown any improvement

Table 1: Poverty rate and agricultural growth during the years 1980-2011.

Year	Agricultural growth(GDP)	Poverty rate
1980	15168.879	28.1
1982	18516.298	35.5
1984	19100.666	43.0
1986	19694.527	46.0
1988	23798.02	45.0
1990	21450.816	44.0
1992	22603.152	42.7
1994	22024.649	54.7
1996	23751.187	65.6
1998	25006.124	79.2
2000	24739.418	74.0
2002	51886.599	88.0
2004	46011.017	54.7
2006	54880.238	54.0
2008	62711.337	50.0
2010	63869.962	60.9

Sources: NBS, CBN, FAO.

Figure 2: Trend of poverty rate in Nigeria from (1980-2011)



$$\text{Linear trend} = 37.2861 + 1.05618t$$

Result of unit root test

Table 1: Result of stationary test

Variables	ADF-statistics	Critical values	Order of integration
Poverty rate	-3.791513 0.0074	1% level=-3.670170 5% level=-2.963972 10% level=-2.621007	Stationary at first difference
Agricultural growth	-5.282027 0.0002	1% level=-3.679322 5% level=-2.967767 10% level=-2.622989	Stationary at first difference

The results of unit root are contained in table 1. The results revealed that all the variables of the model are found to be stationary at 1percent,level at first difference (d(1)). The differencing thus depicts the change in poverty rate and agricultural growth of the present year and previous years. Differencing was required to make the series stationary, because, to use Granger causality test the two variables must be stationary (Maddala, 2001).

Result of granger causality test

Pairwise Granger Causality Tests

Date: 04/24/13 Time: 16:29

Sample: 1980 2011

Lags: 2

Table 2: Result of granger causality test.

Null Hypothesis	Obs	F-statistics	Prob	Decision
$\Delta R_t \rightarrow W$	29	2.61018	0.0943	Accept
$W \rightarrow \Delta R_t$		2.19461	0.1333	Reject

ΔR_t = change in agricultural growth, W = poverty rate; Lags = 2 and the relationship is established at 10% significant level.

The linkage result in table 2 shows that there is a unidirectional causation from poverty to agricultural growth change, thus agricultural growth in Nigeria depends on poverty during the time frame.

Poverty causes agricultural growth in the result above during the time frame. Majority of people go into farming just because they are poor and not because they really have passion for it. The unidirection causation shows that agriculture does not cause poverty. However the poverty reduction has been associated with growth in yields and in agricultural labour productivity. Then rapid growth in agriculture may open pathways out of poverty for farming households.

Conclusion

This study analyses the agricultural growth and poverty rate in Nigeria economy. The specific objectives of this study are to evaluate the trend of poverty and agricultural growth in Nigeria, to examine the linkage and dimension of between poverty and agricultural growth in Nigeria. These objectives were achieved using ARIMA model and Granger causality test. Based on this the findings of this research, poverty in Nigeria can be alleviated in the future through agriculture. 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 poverty menace and on the other hand alleviate it.

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