

“TOWARDS A DIVERSIFIED NIGERIAN ECONOMY” THE CONTRIBUTION OF AGRICULTURE TO GDP OF NIGERIA

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Abstract

The Nigeria economy is basically regarded as an agrarian economy and therefore agriculture play a pivotal in the nation's GDP. The study examines the impact of the agricultural sector on the economic growth of Nigeria. The data used was obtained from World Bank Statistics Nigeria Data Portal, World Bank World Development Indicators and the Statistical Bulletin of the Central Bank of Nigeria, regression analysis was used to analyse the data, the result revealed that there is a positive relationship between agricultural GDP and total GDP between the periods of 1990 to 2013. Based on the findings, it was recommended that government should ban importation of some agricultural products to encourage local production and also to increase government budgetary allocation to the sector to reduce financial distress in the implementation of indispensable agricultural programmes.

Keywords: Agriculture, economic growth, GDP, employment, Nigeria

INTRODUCTION

Agriculture is as old as history of man emanated thousands of years prior to the invention of writing. Predominantly, cereal agriculture such as wheat and barley were the earliest crops grown 23,000 years ago in the Middle East and subsequently spread quickly to Western Asia, Egypt and Europe. Agriculture is said to involve crops production, livestock, fishing and forestry. The role of agriculture in the economic growth and development of developed and developing economies cannot be over emphasized. The sector serves as bedrock for various economies

including the world's leading economies through advancement in technology. Apart of its contribution to economic growth, it also provides food for the growing population, employment, income, raw materials for industries and drastically reduction in poverty.

In Nigeria, agriculture and petroleum are the top two primary products of the economy due to their larger portion of contribution to GDP. As at independence in 1960, agriculture accounts for 63% share of total GDP, it decline to about 8% in 1988 after the oil boom (Aigbokhan, 2001). Due to the shift of priority to agricultural development, its share to GDP increases tremendously. Its contribution was about 36% share of GDP in 2001 and 42% in 2007 (UNDP).

Base on this background, the study attempts to analyse the contribution of agriculture to GDP of Nigerian economy for the period of 1990 – 2013.

Research Hypotheses

H₀: There is no linear relationship between economic growth and agriculture

H₀: The mean of all agricultural components (crop production, livestock, forestry and fishing) are equal.

LITERATURE REVIEW

Concept of Agriculture

The origin of agriculture can be trace back to the history of hunter-gatherer societies which began thousands of years before the discovery of writing (National Museum of Natural Science, 2009). Cereal agriculture was primarily the earliest cultivations principally on wheat and barley, and earliest in the Middle East 23,000 years ago, and proliferates rapidly to Western Asia, Egypt and Europe (Wadley and Martin, 1993, Science Daily, 2015).

A number of people define agriculture in various ways. Bareja (2014) observes that the concept is a relative and heterogeneous concept due to its large coverage and dynamic in the field of science. It is acknowledge that no definition can be dogmatically for everyone and for all purposes. Thus, some of the definitions are given below:

Ahmed (1993) cited in Olajide, akinlabi and Tijani (October Edition) defines agriculture as “the production of food and livestock and purposeful tendering of plants and animals”. In a similar ground, Akinboyo (2008) put it as the science of making use of the land to raise plants and animals. This signifies the scientific production of crops/plants and animals for human consumption.

In addition, Monye-Emina (2009) describes the concept that it consists of the primary production of crops, fishing, forestry, livestock which were considered as the principal human

activity and as well as the marketing of these products. It was as well described by National Bureau of Statistics (2015) as a concept that comprises of four sub-activities, namely: crop production, livestock, forestry and fishing.

Agriculture had being accorded immense recognition as a substratum of even today world's leading economies. As such, developing economies are incorporated, however, Attah (2012) conceptualize the role of agricultural sector in the Nigerian economy to include:

1. A major contributor to the country's GDP
2. Source of income for a large proportion of the population engaged in the sector
3. Provision of adequate food for the people
4. Supply of raw materials required by the industrial sector
5. A major foreign exchange earner through export; and
6. Provision of employment opportunities for the teaming population

Agriculture and GDP

Stringers and Pingali (2004) asserts that a robust fulfilling agricultural sector is a structural for general economic growth. Enhancing agricultural performance creates income to people which lead to households to save and spend more. This accelerates growth and investment in other sectors. Agriculture also makes available tax revenues and provides local manufacturers that are agricultural based with variety of raw materials. It was as well put forward by Ogen (2007) cited in Toby and Peterside (2014) that agricultural sector possesses a multiplier effect on the socioeconomic aspect of the nation by enabling her to provides food for the teaming population, creates employment, gain foreign exchange and supply raw materials for industries.

Agriculture plays a paramount role in Indian economy. The sector contributes about 17% to total GDP and creates over 60% of employment to her population. Though, it experiences a sudden fall from 30% in 1990-91 to a lesser amount of 15% in 2011-12, but it is still the main stay of the economy (Mishra and Bhandari, 2013, Tyagi, 2012). Similarly in Bangladesh, agricultural sector contributed 70.0% to the total GDP in 1950 and later had a reduction to 20.6% in 2009 (Anam and Hossain, 2012).

In agrarian economy, agriculture is a hub of economic activities and a major source of growth for the national economy. In Uzbekistan, agricultural sector contribution to GDP is about 29% (Tadjibaeva, 2013). Also in Pakistan, the economic survey of 2010 revealed that agricultural sector contribution to GDP was 21.1% (Nazish Iqbal and Ramzan, 2013).

Adeniran and Obasan (2010) observe that productivity growth is mostly high in agriculture particularly in advance and developing economies (Nigeria inclusive). In the same vein, Ogbalubi and Wokachi (2013) opine that agriculture is the bedrock of the world's leading

economies through improvement in technology. They further clarify that regardless of the circumstance of the sector progressively decrease in its impact to GDP of many economies, it still contributes larger portion of the GDP of several economies chiefly the developing ones.

In Ghanaian economy, agriculture has contributed immensely to the economic growth and development. OECD (2010) submits that the sector share to GDP was around 40% in the late 1990s and was still more than 35% before 2007; it falls below 35% in 2007 and 2008 due to speedy growth in the service sector. Despite these sudden falls of the sector's contribution to GDP, it still remains the mainstay of the economy in the whole post-independence saga.

Izuchukwu (2011) opines that as at independence in 1960 in Nigeria, agriculture has been the mainstay of Nigerian economy thereby contributes over half of the GDP and provides employment for the increasing population. Subsequently in contrast, the sector contributes 25% to the total GDP of Nigeria between 1975 and 1977 (Awe, 2013). However, despite this sudden reduction in its contribution to GDP, Akpan (2012) elucidates that the sector employs about two-thirds of the nation's total labour force, provides sources of income for about 90% of rural population and the world's largest producer of yam, cowpea and cassava.

Agriculture and petroleum are regarded as the "brain box" i.e. top two primary products of the Nigerian economy and remain the major contributors to GDP (Umar and Zubairu, 2012). The shrink in the contribution of agriculture to GDP far back as mid and early 1970s has been in contrary; the sector share of GDP ascended from 30% in 1981 to near 36% in 2000 and 42% in 2007 (UNDP, 2009). This made the sector to experience rapid growth in recent times.

Prior to independence in 1960 in Nigeria, agriculture was the prominent sector in the nation's economy contributing larger portion to GDP. The sector contribution to GDP in 1960 – 64 was 63%, and 54% in 1965 – 69. However, it continued to decline substantially from 1970s. It declined to 33% in 1970 – 74, and averagely 11% and 15% respectively in 1971 – 77 and 1981 – 86. It decline further to 8% in 1988 – 93, and subsequently ascended to 12% in 1994 – 98 (Aigbokhan, 2001).

Kolawole and Omobitan (2004) argue that poverty is severe and deep in Africa and can only be salvage through growth in the economy. Economic growth is very significant for maintaining progress and poverty reduction. In Nigeria, the agricultural sector contributes 47% of productive employment and 41% share of GDP in 2005.

Udoh and Ebong (2011) submits that even with the global economic crises of late 2008 which also affected developing economies, that is, of 6.4% GDP growth expected in 2009 reduced drastically to 4.5%. But during the crises, GDP growth in Nigeria was driven by non-oil sector particularly agricultural sector which accounted for 39.8% out of the 80.7% aggregate contribution of non-oil sector in 2008 (Ajakaiye and Fakiyesi 2009).

National Bureau of Statistics (2015) submits that in first quarter of 2015, agricultural sector grew by 7.44% in nominal terms as compared to 5.90% past performance in first quarter of 2014. This thereby contributed 17.77% to nominal GDP in the first quarter of 2015 as in contrast to 17.25% in the first quarter of 2014. But in real terms, the sector contribution was 19.79% in the first quarter of 2015, as against 19.65% in the first quarter of 2014.

METHODOLOGY

Study Area

The main area of concern is Nigeria situated in the African continent. It constitutes a population of over 140 million folks with an area of 923,769 km². It is located on the west of the continent, bordered on the north by Niger and Chad Republic's, south by the Gulf of Guinea, west by the Republic of Benin and east by the Republic of Cameroon. It typically experience two seasons, i.e. rainy and dry seasons, with agriculture being the backbone of the economy and a chief employer of labour.

Sources and Type of Data

The researcher employed a desk study review on general assessment of the existing data mainly from journals, conference papers, United Nation Development Reports, Central Bank of Nigeria Bulletins, Published materials from the National Bureau of Statistics and as well as information's from the internet.

The study used secondary data which were obtained from the following sources. The data on Gross Domestic Product were obtained from World Bank Statistics, Nigeria Data Portal. Gross Capital Formation and Total Labour Force were obtained from World Bank World Development Indicators. And time series data on Gross Domestic Products of agricultural sector (Crop Production, Livestock, Forestry and Fishery) were obtained from the Statistical Bulletin of CBN.

The study uses annual time series data from 1990 to 2013 (covered 24 years). The aim of choosing this duration is to tentatively test the magnitude of the contribution of agricultural sector to GDP.

Model Specification

This study measure the growth of GDP which is been affected by agriculture in Nigeria. Using a linear multiple regression, the dependent variable here is GDP, and the independent variable include Gross Capital Formation (GCF), Total Labour Force (TLF), Crop Production (CRO), Livestock (LIV), Forestry (FOR) and Fishery (FIS). The model is thus used to find out the

relationship between independent variables (GCF, TLF, CRO, LIV, FOR, and FIS) to dependent variable (GDP). The spirit of this model is to determine the comparative weight of each agricultural component – CRO, LIV, FOR and FIS on increase economic growth of Nigeria. A model is mathematical abstraction of reality; the selection of the model is based on simplicity and credibility. Based on this, the model is formulated using the multiple regression models. The regression function is given as:

$$Y_i = \beta_0 + \beta_1 (x_1)_i + \beta_2 (x_2)_i + \beta_3 (x_3)_i + \dots + \beta_K (x_K)_i + \epsilon_i$$

Where,

Y = dependent variable; β_0 = expected value of Y when x_1, x_2, \dots, x_K are all equal to zero;

β_1 = for every unit (increase/decrease) in the value of x_1 we predict a β_1 change in Y .

In terms of model estimation, a multiple regression is used to reflect the explanatory nature of the variance; thus, confirmation of the credibility of the model was based on the assessment of this criterion:

The statistical theory contained the Ordinary Least Square (OLS) comprising of R-square (R^2), F-statistics and t-test. The R^2 is associated with the whole explanatory Strength of the analysis, F-statistics is concern with the relationship between variables and t-test measure the meaningful impact of the independent variables on the dependent variable.

EMPIRICAL RESULTS AND DISCUSSION

The summary of the result of the regression analysis performed is presented in table 1(details of the data used and result obtained were in appendices).

Table 1: Summary of the regression result

Model	R-square	R-square adjusted	p-value
1	99.9%	99.5%	0.001

Our main point of interest in the regression output is the value of coefficient of determination (R^2). The $R^2 = 99.6\%$ indicating that the regression is meaningful or the model is a good model. The model explains that variation in GDP is statistically accounted for by the 99.6% variation in agricultural components (crop production, livestock, forestry, and fishing). We therefore reject the null hypothesis that there is no linear relationship between economic growth and agriculture, and conclude that there exists a positive relationship.

The summary of the result of the analysis of variance is presented in table 2.

Table 2: Analysis of variance

Model	Degree of freedom	F-value	P-value
1	23	708.62	0.001

The analysis of variance test essentially performs the same function as t-test for the significance of the slope. The F-value = 708.62 is larger creating more chance of rejecting null hypothesis, and P-value = 0.001 is negligible giving more confident of accepting alternative hypothesis. We therefore reject null hypothesis that the mean of all agricultural components (crop production, livestock, forestry, and fishing) are equal, and conclude that economic growth is affected positively by agriculture in different manners. These results are in consonant with the earlier findings of Adeniran and Obasan (2010) that productivity growth is mostly high in agriculture in advance and developing economies.

CONCLUSION AND RECOMMENDATIONS

Basically, non-oil sector particularly agricultural sector was the mainstay of Nigeria economy before the oil boom of 1970s. Despite this oil boom, it is imperative to note that agricultural sector still remained the major contributor to the economy, principally in the area of domestic output and employment creation. The research finding shows that there exist a positive relationship between agricultural sector and economic growth. The sector has suffered neglect over the years, but still contribute larger portion the nation's GDP. It has been long overdue for the Nigerian economy to be diversified, though the present administration has it in their agenda for which agriculture will be accorded priority because of its potentials. Finally, the limitation of the current research in a nutshell can be attributed to unreliability of Nigerian data and may affect the exactness of the results. Based on the findings, in order for the sector to grow and contribute maximally to the economic growth of Nigeria, the following recommendations are put forward:

- Government should ban importation of some agricultural products and encourage local production.
- Government should increase the budgetary allocation to the sector and make loan available to agriculturist at a concessionary interest rate. This will encourage them to expand their farm by agricultural mechanisation, acquired modern farm tools and bring about increase in their production capacity.
- Dry season farming should be encouraged through adoption of modern irrigation system; farmers will be engage throughout the year which will increase the production capacity of the nation.

- Government should encourage youths that constitute larger portion of labour force particularly those in the villages to participate in agriculture through provision of adequate infrastructure that will facilitate their involvement.

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APPENDICES

Appendix 1: Raw Data Used

YEAR	GDP (Constant LCU) _a	GROSS CAPITAL FORMATION (Constant LCU) _b	TOTAL LABOUR FORCE _b	1990 Constant Basic Prices (N' Billion)			
				CROP PRODUCTION _c	LIVESTOCK _c	FORESTRY _c	FISHING _c
1990	19,680,406,952,600.00	2,656,972,945,100	30,043,881	106.64	9.50	2.02	4.08
1991	19,558,811,442,400.00	2,646,854,658,900	30,788,219	113.51	9.41	2.21	4.47
1992	19,643,642,967,100.00	2,567,588,459,300	31,635,543	116.91	9.49	2.26	4.03
1993	20,054,269,318,900.00	2,978,268,761,900	32,532,154	120.30	9.55	2.31	3.02
1994	20,236,715,708,300.00	2,675,712,204,400	33,417,326	123.91	9.65	2.37	2.82
1995	20,174,494,087,100.00	1,974,803,508,300	34,343,507	128.13	10.05	2.42	3.11
1996	21,181,948,915,400.00	2,332,144,767,600	35,194,224	132.98	10.34	2.43	3.75
1997	21,775,521,442,700.00	2,538,291,189,800	36,095,012	138.70	10.60	2.46	4.18
1998	22,366,866,252,100.00	2,409,916,303,200	36,972,865	144.11	10.89	2.49	4.77
1999	22,472,938,336,300.00	2,339,406,172,700	37,946,736	151.66	11.19	2.52	5.44
2000	23,668,070,182,400.00	2,737,853,673,200	38,875,613	156.21	11.45	2.56	5.66
2001	24,712,084,188,700.00	2,143,533,661,800	39,626,299	162.15	11.79	2.61	6.11
2002	25,647,349,633,900.00	2,579,534,513,600	40,482,284	168.88	12.36	2.62	6.50
2003	28,302,923,550,900.00	3,872,889,758,900	41,221,986	180.71	12.88	2.66	6.76
2004	37,851,134,166,500.00	2,943,217,996,100	42,063,952	192.45	13.72	2.84	7.20
2005	39,154,979,623,600.00	2,635,382,764,700	43,250,245	206.18	14.64	3.01	7.64
2006	42,369,981,241,000.00	4,200,470,846,600	44,459,832	221.62	15.65	3.19	8.14

2007	45,263,172,340,100.00	5,953,283,301,800	45,659,878	237.69	16.74	3.38	8.67
2008	48,101,292,603,600.00	5,910,081,749,500	47,008,096	252.47	17.88	3.59	9.24
2009	51,436,836,336,000.00	7,964,939,516,800	48,330,258	267.18	19.04	3.80	9.81
2010	55,469,350,300,000.00	9,183,059,440,000	49,706,559	282.61	20.26	4.02	10.40
2011	58,180,351,900,000.00	8,425,762,150,000	51,167,238	298.41	21.51	4.24	11.01
2012	60,670,050,500,000.00	8,640,765,160,000	52,600,554	309.64	22.70	4.49	11.66
2013	63,942,845,600,000.00	9,320,347,190,000	54,199,112	324.26	23.98	4.73	12.31

Source: ^a World Bank Statistics,
Nigeria Data Portal

^b World Bank World
Development Indicators

^c CBN Statistical Bulletin.

Appendix 2: Result of Regression

Regression Analysis: GDP versus GCF, LAB, CRP, LIV, FOR, FIS

The regression equation is

$$\text{GDP} = 4.15\text{E}+13 - 1.25 \text{ GCF} - 2246945 \text{ LAB} + 5.51\text{E}+11 \text{ CRP} + 1.40\text{E}+12 \text{ LIV} \\ - 9.15\text{E}+12 \text{ FOR} - 1.13\text{E}+12 \text{ FIS}$$

Predictor	Coef	SE Coef	T	P
Constant	4.14831E+13	7.84709E+12	5.29	0.000
GCF	-1.2478	0.3980	-3.14	0.006
LAB	-2246945	371478	-6.05	0.000
CRP	5.51379E+11	82976870138	6.64	0.000
LIV	1.40350E+12	1.36435E+12	1.03	0.318
FOR	-9.15052E+12	4.67470E+12	-1.96	0.067
FIS	-1.12523E+12	6.62569E+11	-1.70	0.108

S = 1.131572E+12 R-Sq = 99.6% R-Sq(adj) = 99.5%

Analysis of Variance

Source	DF	SS	MS	F	P
Regression	6	5.44418E+27	9.07363E+26	708.62	0.000
Residual Error	17	2.17678E+25	1.28046E+24		
Total	23	5.46594E+27			