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Analysis of the Contribution of Agricultural Sector on the Nigerian Economic Development

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Agricultural sector is seen as an engine that contributes to the growth of the overall economy of Nigeria, despite these efforts the sector is still characterized with low yields, low level of inputs and limited areas under cultivation due to government dependence on mono-cultural economy based on oil. This paper is an attempt to examine the impact of the agricultural sector on the Nigerian economy. The panel of data used was sourced from the statistical bulletin of the Central Bank of Nigeria and World Bank's development indicators, multiple regression was used to analyze the data, the result indicated a positive relationship between Gross Domestic Product (GDP) vis a vis domestic saving, government expenditure on agriculture and foreign direct investment between the period of 1986-2007. It was also revealed in the study that 81% of the variation in GDP could be explained by Domestic Savings, Government Expenditure and Foreign Direct Investment. In order to improve the agricultural sector it is recommended that government provides more funding for agricultural universities in Nigeria to carry out researches on all areas of agricultural production this will lead to more exports and improvement in the competitiveness of Nigeria agriculture production in international markets. The Central bank of Nigeria should also come up with a stable policy for loan disbursement to farmers at a reasonable interest payback.

Field of Research: Agriculture, Gross Domestic product, Economic Development

1. Introduction

Agriculture has been an important sector in the Nigerian economy in the past decades, and is still a major sector despite the oil boom; basically it provides employment opportunities for the teeming population, eradicates poverty and contributes to the growth of the economy.

Economic history provides us with ample evidence that agricultural revolution is a fundamental pre-condition for economic growth, especially in developing countries (Woolf and Jones, 1969; Oluwasanmi, 1966; Eicher and Witt, 1964). Ukeji (2003) submits that in the 1960's, agriculture contributed up to 64% to the total GDP but gradually declined in the 70's to 48% and it continues in 1980 to 20% and 19% in 1985, this was as a result of oil glut of the 1980's. Historically, the root of the crises in the Nigerian economy lies in the neglect of the agricultural sector by the Federal Government towards developing dependence on a mono-cultural economy based on oil. The objective of this paper is to investigate the contribution of domestic savings, government expenditure on agriculture and foreign direct investment on agriculture and the general impacts of agricultural sector on the Nigerian economy bearing in mind that the sector is fundamental to the sustenance of life and the bed rock of economic growth.

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This paper is divided into five sections; section one introduces the readers to the study; some relevant literatures were reviewed in section two. Section three discusses the methodology used in the study; the fourth section provides the results and discusses the findings, the final section draws the appropriate conclusion from the study and gives recommendation.

2. Literature Review

Agriculture has been the backbone of the economy in Nigeria providing employment and source of livelihood for the increasing population it accounts for over half of the GDP of the Nigerian economy as at independence in 1960. However, the role it plays in the regional and economic development of the country has diminished over the years due to the dominant role of the crude oil sector in the economy. With the increasing food demand in Nigeria, the country has available natural resources and potential for increasing the volume of crop production towards meeting the food and nutritional requirement of the rapidly increasing population and guarantee food security in the country. Therefore, the source of national wealth is essentially agriculture. Development economists have focused on how agriculture can best contribute to overall economic growth and modernization. Todaro and Smith (2003) looked at Lewis theory of development, and reported that the underdeveloped economy consisted of two sectors. These sectors are the traditional agricultural sector characterized by zero marginal labor productivity and the modern industrial sector. Rostow (1960) in his historical approach to the process of economic growth distinguishes five stages of economic growth, these are: Traditional society, Pre-conditions for take-off, Take –off, Drive to maturity and Age of high mass-consumption. According to Rostow (1960), the take-off stage is the 'Great watershed' in the life of a society when growth becomes its normal condition. Forces of modernization contend against the habits and institutions. The value and interest of the traditional society make a decisive breakthrough and a compound interest gets built into the society structure. From this historical approach it is said that agriculture plays an important role in the first three stages. (Traditional society, pre-conditions for take-off and take-off stages). The agricultural sector has the potential to be the industrial and economic springboard from which a country's development can take off. Indeed, more often than not, agricultural activities are usually concentrated in the less- developed rural areas where there is a critical need for rural transformation, redistribution, poverty alleviation and socio-economic development. (Stewart, 2000 welcome Address "proceeding of the 7th World sugar Farmers Conference Durban)

2.1 Agriculture, Economic Development and Growth in Nigeria

Agriculture has a strong hold in an economy, for without it a country will always depend on foreign countries to feed its population, the potential contribution of agriculture to economic growth has been an on-going subject of much controversy among development economist, several authors argue that growth in the overall economy depends on the development of agricultural sector (Schuttz, 1964, Gollin, Parente and Rogerson 2002). The growth in the agricultural sector could be a catalyst for national output growth via its effect on rural incomes and provision of resources for transformation into an industrialized economy (Eicher and Staatz, 1984; Dowrick and Gemmmell, 1991; Datt and Ravallion, 1998; Thirtle, Lin and Piesse 2003).Johnston and Mellor (1961)) postulates that agriculture contributes to the economic growth and development through five inter-sectoral linkages. The sectors are linked via, (i) supply of surplus labor to firm in the industrial sector, (ii) supply of food for domestic consumption, (iii) provision of market for industrial output,(iv) supply of domestic savings and industrial investment and (v) supply of foreign exchange from agriculture export earnings to finance import of intermediate and capital goods. In addition to these five direct market-based linkages, Timmer(1995) observed that agriculture indirectly contributes to economic growth via its provision of better caloric nutrient intake by the poor, food availability, food price stability and poverty reduction.

Therefore it is clear that agricultural growth has played a historically important role in the process of economic development, evidence from industrialized countries as well as countries that are rapidly developing today indicate that the sector has been the engine that contributes to the growth of the overall economy.

2.2 Agricultural Sector Policies and Programmes

Agricultural policy- making in Nigeria has been through review overtime. During each phases of review, the characteristics of policy have reflected the roles expected of the sector and the relative available resources, especially since petroleum became a major source of revenue for funding programme. It then means that agriculture no longer command the same amount as in the past. These notwithstanding, agricultural policy have been dynamic. The Federal Government established some policies and programme such as the Structural Adjustment Programme (SAP) which was launched in July 1986, to remove several administrative bottlenecks and adopting a free market oriented economy that would encourage private enterprises and more efficient use of resources. The objectives of SAP was (i) To increase the production of exportable cash crop thereby diversifying the export base of the economy, (ii) To raise rural employment and income (iii) to increase domestic food production and raise nutritional status and standard. The following policy instruments of SAP were design to influence the sector indirectly or directly such as the (i) Fiscal policies, (ii) Monetary and (iii) Trade and foreign exchange rate policies.

Before the introduction of SAP in 1986, The Federal Government of Nigeria has implemented several agricultural policies and programme. While some of the programme were abandoned or restructured, some are still in place. These policies are (i) Farm Settlement Scheme, (ii) National Accelerated Food Production Programme (NAFPP), (iii) Agricultural Development Projects (ADPs), (iv) River Basin Development Authorities (RBDAs) (v) Nigerian Agricultural, cooperation and Rural Development Bank (NACRDB), (vi) Operation Feed the Nation (OFN), (vii) Green Revolution Programme (viii) Directorate of Foods, Roads and Rural Infrastructures (DFFRI) (ix) Agricultural Credit Guarantee Scheme Fund (ACGSF).

Despite all these policies framework and programme, it been noted that the sector performance has not been impressive enough, in terms of its contribution to the country's development. In 2004 the Federal Government launched another economic reform by name National Empowerment and Development Strategies (NEEDS). The programme was aimed at promoting growth as well as reduces poverty through a participatory process involving civil society and development partners. In agricultural sector, NEEDS was aimed at promoting and improving production, distribution and processing of agricultural products.

2.3. Contributions of Agriculture to Economic Development in Nigeria

Notwithstanding Nigeria's rich endowment in black oil and other mineral resources the wellbeing of her economy still largely depends on agricultural sector. The Nigerian economy is essentially agriculture in terms of national output and employment generation. It is the largest contributor to Gross Domestic Production (GDP) (average 38% in the last 8 years) with crops accounting for 80%, forestry 3% and fishery 4%. It provides employment for about 65% of the adult labor force and the food and fiber needs of a large and increasing population. The agro-industrial enterprises depend on the sector for raw materials whilst 88% of the non-oil exports earning come from the sector. The sector contributes a great deal to the development of the economy in various ways:

Agriculture contributes significantly to national food self –sufficiency by accounting for over 90% of total food consumption requirements, its helps to maintain a healthy and peaceful population and also a source of food and nutrition for households. Furthermore the ultimate objective of interest of economists in productivity should be to find ways of increasing output per unit of input and attaining desirable inter-firm, intra-firm and inter sector transfers of population resources thereby providing the means of raising the standard of living.

In Nigeria, agriculture export has played an important role in economic development by providing the needed foreign exchange earnings for other capital development project. Ekpo and Egwaikhide (1994) observed that Nigeria agricultural export has enlarged to include cocoa beans and palm kernel. Statistics indicate that in 1960 agricultural export commodities contributed well over 75% of total annual merchandise exports. In 1940's and 50's Nigeria was ranked very high in the production and exportation of major crops in the world. For instance, Nigeria was the largest exporter of palm oil and palm kernel, second to Ghana in cocoa and third position in the exportation of groundnut. Olayide and Essang (1976) report that Nigeria export earnings from major agricultural crops contributed significantly to the Gross Domestic Product (GDP).

In terms of employment, the sector is still leading in economic activities, while accounting for one-third of the Gross Domestic Product (GDP). It remains the leading employment sector of the vast majority of the Nigerian population as it employs two-third of the labor force Bola (2007). Olatunji (2002) observed that in Nigeria today, farming still remains the sources of employment of majority of the adult population, its productivity is the most important single factor influencing the standard of living of both the rural and urban centers.

Agriculture indeed has remained the major sources of income to the economy. About 90% of the rural population is involved in activities related to the crop sub-sector which provides the bulk of agricultural income. Similarly the crop sub-sector supports the processing industry by providing raw materials.

3. Methodology

In order to examine the effect of the overall agricultural growth on economic development, three variables were considered as the independent variables, they are Domestic Savings, Government Expenditure on Agriculture and Foreign Direct Investment on Agriculture. While the economic development which is proxy by Gross Domestic Product (GDP) as dependent variable. All other data relating to the independent variable and that of the dependent variable were sourced from the Central Bank of Nigeria statistical bulletin. The time series data cover 22 years ranging from 1986-2007. The purpose of choosing this period is to empirically test the significance or the extent to which agricultural sector contributes to the economic growth despite several years of Government neglect and the renewal of effort towards stabilizing the sector, since 1986 to date. The statistical formulation of the model can therefore be presented as follows:

Model= $Y_t = \beta_0+X_1\beta_1+X_2\beta_2+X_3\beta_3+\mu_t$

$$\frac{\partial S}{\partial \beta_1} = 2\sum(Y_1-\beta_1-\beta_2X_{1,i}-\beta_3X_{2,i})(-1) = 0 \text{ and}$$

$$\frac{\partial S}{\partial \beta_2} = 2\sum(Y_1-\beta_1-\beta_2X_{1,i}-\beta_3X_{2,i})(-X_{1,i}) = 0$$

$$\frac{\partial S}{\partial \beta_3} = 2\sum(Y_1-\beta_1-\beta_2X_{1,i}-\beta_3X_{2,})(-X_{2,i}) = 0$$

$$\sum_i Y_i = N\beta_1+\beta_2\sum_i X_{1,i} + \beta_3\sum_i X_{2,i} \text{ ……………………………}(2)$$

$$\sum_i X_{1,i}Y_i = \beta_1\sum_i X_{1,i} +\beta_2\sum_i X^2_{1,i} +\beta_3\sum_i X_{1,i}X_{2,i} \text{ ……………….}(3)$$

$$\sum_i X_{2,i}Y_i = \beta_1\sum_i X_{2,i}+ \beta_2\sum_i X_{1,i}X_{2,i} + \beta_3\sum_i X^2_{2,i} \text{……………….}(4)$$

GDP= $\beta_0+ \beta_1$DS + β_2GEA +β_3 FDI +μ_t
Where:

GDP = Gross Domestic Product
DS = Domestic Savings

GEA = Government Expenditure on Agriculture
FDI = Foreign Direct Investment on Agriculture
μ = Error term

Test
Null Hypothesis $H_o: \beta_1 = \beta_2 = \beta_3 = 0$
Alternative Hypothesis H_1 : β_1 or β_2 or β_3 or any two of them or all are nonzero
At least one of them is significant
F-test for overall significance of the model

$$F = \frac{V_1/M_1}{V_2/M_2} \sim F(m_1, m_2)$$

V_1 = Sum of variation due to explanatory variable and
V_2 = Sum of variation not explained (squared residuals)
$M1$= degrees of freedom of K explanatory variables (K-1)
$M2$ = degrees of freedom is residual (N-K)

Multiple regression method, using SPSS was employed to analyze the impact of agriculture on the Nigerian economy.

4. Empirical Result and Analysis

Table1 below depicts the multiple regression result describing the impact of agriculture in the Nigerian economy, Gross Domestic Product (GDP) as dependent variable and Domestic savings, Government Expenditure on Agriculture and Foreign Direct Investment on Agriculture, as independent variable.

Table 1 Data Analysis

Model	Unstandardized coefficients			
	B	Std Error	t	significance
(Constant)	297296.536	23523.151	12.638	.000
Domestic Savings	.113	.021	5.464	.000
Govt. expenditure	.848	1.782	.475	.640
FDI on Agric	56.431	27.556	2.047	0.56

R 0 .902, R-square 0 .813, Adjusted R-square 0 .782, std. error of the estimate 50000.9132

Table 2 ANOVA[b] Data Analysis

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.954E11	3	6.513E10	26.052	.000[a]
	Residual	4.500E10	18	2.500E9		
	Total	2.404E11	21			

The result from the ANOVA table (Table 2) shows that all the three variables have a significant impact on GDP. From table 1, it could be observed that Foreign Direct Investment on Agriculture contributes the most (56.43) this means that for every unit change in FDI there is a corresponding change of 56.43 in GDP. Domestic savings also contributes to GDP, for every unit change in Domestic Savings there is a corresponding change of 0.113 in GDP. Looking at the P- value of the government expenditure on agriculture P- value is 0.640 > 0.005, though we could be tempted to say that government expenditure is insignificant, we use statistical reasoning to say that we do not have enough evidence to make that conclusion, if the value of the coefficient is anything to go by, then we conclude that for every unit change in government expenditure there is a corresponding change in GDP by 0.848. In furtherance to the above result a look at the P-value of table 2 on the Anova table reveals that all three predictor variables significantly contribute towards GDP.

The value of R= 0.902 tells us that there is a high positive relationship between the predictor variables (Domestic Savings, Government Expenditure on Agriculture and Foreign Direct Investment on Agriculture) and GDP. The value of R^2 of 0.813 (known as the coefficient of determination) tells us that 81% of the variation in GDP could be explained by Domestic Savings, Government Expenditure and Foreign Direct Investment while the remaining 19% could not be accounted for. The Adjusted R^2 of 0.782 is close to the R^2 value of 0.813 meaning that the model is fit for making generalization. Furthermore the value of F= 26.052 indicates the models goodness of fit to the data.

Figure1a: Distribution of the data

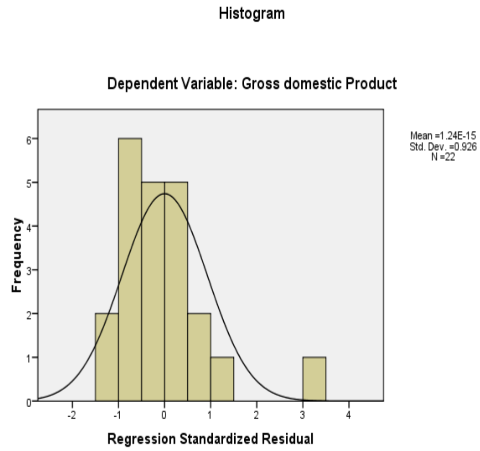
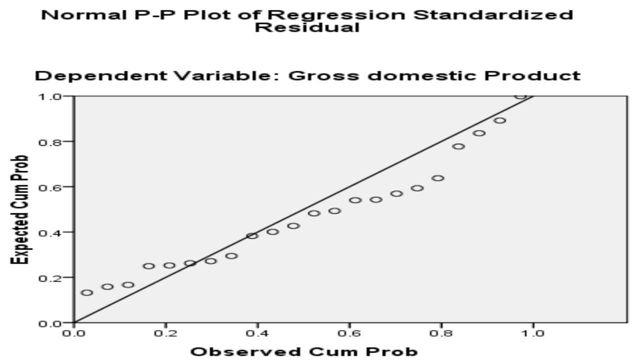


Figure1b: Data values around the line of best fit



From the general equation of the normality and level of significance: Two Tail Test

$P\ (1.96< Z < 1.96) = 1\ \alpha) = 0.95$

$E(x) = \mu$

$$Z = \frac{x- \mu}{\Delta}$$

Figure 1a depicts that the regression standardized residual is skewed to the left meaning that the predictor variables (Domestic Savings, Government Expenditure on Agriculture and Foreign Direct Investment on Agriculture) have a significant effect on Gross Domestic Product (GDP).

Figure 1b, shows that the Observed Cumulative Probability is lying around Expected Cumulative Probability meaning that the actual and expected results are around Gross Domestic Product (GDP) are closely related to the predictor variables (Domestic Savings, Government Expenditure on Agriculture and Foreign Direct Investment on Agriculture).

5. Conclusion and Recommendation

It is imperative to note that until recently when oil became a major source of national revenue, besides the fact that its economy has been essentially agric base, agricultural sector has remained a significant contributor to the Nigeria economy, especially in terms of employment generation and national output. The research finding reveals that there is a positive relationship between Gross Domestic Product (GDP), and the three independent variables (Domestic Saving, Government Expenditure on Agriculture and Foreign Direct Investment on Agriculture). Despite these laudable efforts, Nigeria's agricultural sector is still characterized by low yields, attributable to the use of crude implements, a low level of inputs and limited areas under cultivation, among others. This development created unwarranted situation that led to poor output of crops and livestock which hitherto served as foreign exchange earnings for the country, factors such as environment degradation, desertification and global warming contribute to poor forestry development and crops production, similarly the findings confirm the positive development witness by the agricultural sector is developing rapidly making the sub sector production very vibrant in the economy. The relative progress have been attributed to the country's constant policy reviews, emphasis placed on agriculture by international community, and technical assistance by such organizations as FAO, the United Nation Millennium Development Goals (MDGs), and collaboration with country like China. While it's expected that after all these years agricultural sector should have been the major contributor to Nigeria's economy development as it was in the 1960s, its general impact on the country's development process has left much to be desired. However, in order to improve the agricultural sector in Nigeria, the following suggestions are been proposed for consideration.

a. The government should provide more funding for agricultural universities in the country to carry out more research on all aspect of agricultural output, such as livestock, crops, fishing and forestry, crop preservation.
b. The Central Bank of Nigeria should come out with stable policy guideline to enable the commercial banks disburse loans to farmers at a very lower interest rate, in order to help them expand their production capacity. Training more extension workers to educate farmers in the use of modern production techniques to help boost the country's production capacity.
c. Government should encourage the use of modern mechanized farm tools, and subsidize the prices of agro-chemical and fertilizer for farmers.
d. Establishment of more research institute to improve seedling production, encourage the use of irrigation farming system and provision of storage facilities for seasonal products as means of improving the country's agricultural output.
e. Government should encourage more exportation of agricultural output as this in turn will enhance external foreign exchange earnings and improve the competitiveness of Nigerian agricultural produce in the international markets.

References

Bola, O 2007, *Nigeria Agricultural Sector* Oxford University Press

Central Bank of Nigeria 2007, *Statistical Bulletin* vol 18,pp 132-149.

Datt, G & Ravallion, M 1998, "Farm Productivity and Rural Poverty in India" *Journal Development Studies,* 34:62-85

Dowrick, S & Gemmell, N 1991, "Industrial catching up and economic growth: a comparative study across the world's capitalist economics" *Economic Journal* 101:263-276

Eicher,C & Witt, L (eds.) 1964, *Agriculture in Economic Development New York:* McGraw Hill, London.

Ekpo, A & Egwaikhide, F 1994, Exports and Economic growth in Nigeria: A Reconsideration of the evidence: *Journal of Economic Management,* 1 (1): 100-115

Gollin, D, Parente, SL & Rogerson R 2002, "The role of agriculture in development" *American Economic Review* 92(2): 160-164

Johnston, B & Mellor, J 1961, “The role of agriculture in economic development” *American Economic Review* 51(4): 556-593
Jones, EI & Woolf, SS (eds) 1969, *Agrarian change and Economic Development*: *The Historical problem* London: Methuen
Olatunji, MD 2002, *The State of Nigeria Economy*: Unemployment
Oluwasanmi, HA 1966, *Agriculture and Nigeria’s Economic Development Ibadan:* Ibadan University Press
Rostow, WW 1960, *The Stage of Economic Growth: A non communist manifesto* London Cambridge University Press
Schuttz, TW 1964, *Transforming traditional agriculture New Haven*: Yale University Press
Thirtle, C, Lin, L & Piesse, J 2003, “The impact of research-led agricultural productivity growth on poverty reduction in Africa, Asia and Latin America” *World Development* 31(2):1959-1975
Todaro, MP & Smith, SC 2003, *Economic Development* 8th edn, Singapore: Pearson Education
Timmer, CP 1995, “Getting agriculture moving: do markets provide the signals? *Food policy* 20(5): 455-472
Ukeje, RO 2003, *Macroeconomics: An Introduction*, Port Harcourt Davidson Publication.