

## Effect of Foreign Agricultural Aid and Corruption on Agricultural Growth in Nigeria (2002-2013).

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### Abstract

This study examines the effect of Foreign Agricultural Aid and Governance on Agricultural Growth in Nigeria between 2002 and 2013. Agricultural growth (proxied as agricultural GDP) was specified as a function of factors such as Foreign Direct Investment, Foreign Agricultural Aid, Land, Real Exchange rate, Control of corruption, Rule of Law, Governance, Population, Government Expenditure, Human capital and Inflation. Augmented-Dickey Fuller (ADF) unit root test was used to check the unit root properties of the variables, while quantitative estimates were based on Ordinary Least Square (OLS) modeling. The study finds that, after controlling for other factors, foreign Agricultural aid and Government Expenditure significantly affect agricultural growth while Corruption has a negative and significant effect on Agricultural growth in Nigeria. These findings suggest that while foreign agricultural aid could be a driver of growth in the Nigerian agricultural sector if well managed, Corruption will continue to hinder the goal of sustainable agricultural growth if not addressed.

**Keywords:** Agricultural Aid, Corruption, Agricultural Growth, Nigeria

### 1.0 Introduction

The significance of agriculture in the economy of any nation cannot be over-emphasized; and this is because agriculture plays a major role in virtually all social and economic activities of countries. Rostow (1960) in his stages of Economic Growth explained that agriculture is crucial for the “take-off stage” of a nation’s economic growth and development. A strong and efficient agricultural sector for a country like Nigeria would enable the nation to feed its growing population, generate employment, earn foreign exchange and provide raw materials for industries. The agricultural sector has a multiplier effect on any nation’s socio-economic and industry because of the multifunctional nature of agriculture (Ogen 2007 and Obansa, 2013).

According to Islam (2011), there has been slowdown in growth of agricultural production in recent years, especially in the context of the world food crisis, which severely hit developing countries between 2007 and 2008. The decline in agricultural investment, including a decline in the share of the agricultural sector in the aggregate investment, was considered to be a major contributing factor to this crisis. Two components of investment in agriculture have drawn particular attention as being of vital importance in this context. A major one is the trend in foreign aid to agriculture, and the other is the trend in domestic public expenditure on agriculture. As a matter of fact, Akpokodje and Omojimito (2008) stated that despite the Copenhagen agreement, aid inflow into Nigeria and other development countries have been on the decline.

An important objective of foreign aid is to promote the economic development and welfare of recipient countries and it is usually measured by its impact on economic growth. It largely represents an important source of finance in most countries in Sub-Sahara Africa (SSA), including Nigeria, where it can supplement low savings, narrow export earnings and thin tax bases. In fact, foreign aid is considered to be a major supplement to government expenditure in Nigeria. It stimulates economic growth by supplementing domestic sources of finance such as savings, thus increasing the amount of investment and capital stock in the country. Aid also increases investment in physical and human capital, capacity to import capital goods or technology and it is also associated with technology transfer that increases productivity of capital and promotes endogenous technical change (Njeru, 2003).

Meanwhile in recent years, economists and policy makers have debated whether aid has any positive effect on economic growth. While some scholars believe that aid would be effective in promoting growth if certain criteria are met, Sachs (2005) is of the opinion that developing countries need aid to initiate economic growth, and once the economic growth takes place the country will be able to sustain itself. According to Sachs (2005) without aid, some developing countries would be stuck in what he calls the “poverty trap” forever.

However, some policymakers also believe that aid given to corrupt government fosters corruption rather than increase economic growth. Economist like Bauer (1976), have argued that aid does not have positive impact on economic growth, and in some cases it might even ruin the countries that aid is given to. Other scholars in agreement with the position of Bauer (1976) opined that foreign aid has disappointing effect. The argued that that most aid is disbursed to governments that maintain policy environments inimical to economic

growth. Massive corruption is often given as one of the main reason behind the failure of aid. Corruption has been rife and deep-rooted in most aid recipient countries including Nigeria and some observers even believe that foreign aid may actually exacerbate it (Brautigam and Knack, 2004). The necessity of this study is justified by the relevance of foreign agricultural aid and corruption to agricultural and subsequently the economic growth of Nigeria. The major objective of this study therefore is to examine the effect of agricultural aid and corruption on agricultural growth in Nigeria.s

## 2.0 Conceptual framework

### The Nexus between Foreign Aid, Economic Development and Corruption in Sub-Saharan Africa

Corruption, a complex multifaceted phenomenon with multiple causes and effects takes on various forms and functions in different context. Wilkie (2008) opined that poverty, selfishness and poor institutions are the causes as well as the consequences of corruption. Corruption impedes economic growth and development because money is not being reinvested in development and maintenance. It also stifles entrepreneurialism and the development of the private economy because individuals in search for money find it less lucrative to take a chance in business than to go into public sector where corruption supplements income (Rotimi et al., 2013). Furthermore corruption weakens administrative capacity because the competition for corrupt proceeds can lead to inter and intra departmental rivalry which enhance low morale because of the fragmentation combined with frequency of other acts of corruption like nepotism. Lastly, corruption undermines democracy as the over-riding goal of those seeking office is often to capture power and keep the fortress of public power

Numerous studies have consistently identified a significant negative relationship between GDP growth and corruption; aid used to increase economic output in the short term can reduce corruption. Moreover, aid is typically accompanied by efforts to create environments that are less conducive to future corruption, such as the promotion of democracy. According to Alesina and Weder (2002), aid should theoretically reduce corruption, but in practice this is not necessarily the case. Greater aid dependency can lead to less accountability, which fuels corrupt activity. Incentive misalignments mean that financial aid does not always reach its desired destination because corrupt government officials line their pockets with money intended for development projects, in pursuit of economic rents.

Though a lot of studies of have been carried out to examine the effects of corruption on economic growth with researchers coming up with divergent views on the economic effect of corruption, there is little that can be found especially as it affect the growth of the agricultural sector in Nigeria. It will not be out of order to argue therefore that Nigeria has not received adequate attention on this subject matter even though corruption is a serious problem in Nigeria and there cannot be sustainable development in the agricultural sector of the economy in the face of corruption. This study therefore seeks to apply the bound's testing approach to cointegration to examine the effect of agricultural aid and corruption on agricultural growth in Sub-Saharan Africa

## 3.0 Theoretical framework and model specification

### 3.1 Theoretical framework

#### Effect of Foreign Aid and Corruption Agricultural Growth in Nigeria.

In deriving our empirical model for estimating the aid- corruption - growth relationship for Nigeria, we posit that:

$$Y_t = f(X, Z) \dots\dots\dots(1)$$

Y denotes output (i.e., real agricultural *GDP*), *X* is a vector of capital sources, and *Z* is a vector of other growth-determining variables as found in the empirical literature and which are crucial for technological productivity. The above theoretical model motivates the general empirical growth model for the time series growth regression, which is specified as follows:

$$RAGDP_t = \alpha + \beta X_t + \gamma Z_t + \varepsilon_t \dots\dots\dots(2)$$

where *RAGDP* is real agricultural gross domestic product being a proxy for economic output, and *X* and *Z* are as previously defined.  $\mu_t$  is the error term, while subscript *t* denotes time.

$$\text{Hence, } X_t = f(\text{Aid}, \text{PI}) \dots\dots\dots(3)$$

Where 'Aid' denotes foreign aid, which is net official development assistance (ODA) as a share of GDP, The measure of aid to be used in this study will be aid as a percentage of GDP. The aid data will be obtained as bilateral aid and multilateral aid. PI denotes private investment as a share of GDP.

As found in the literature, other growth determinants:

$$Z_t = f(\text{Policy}, C) \dots\dots\dots(4)$$

where ‘policy’ denotes macroeconomic policy variables such as inflation (Fischer 1993; Burnside and Dollar 1997, 2000), C represents the corruption level. These policy measures are found to affect growth of the economy.  $GPOP_{it}$  is the growth rate of population of selected countries in SSA in year t and the growth rate of population is a proxy for the growth rate of labor force.

Thus, substituting (3) and (4) in (2), gives our detailed empirical growth model as:

$$RAGDP_t = \alpha + \beta(Aid, PI) + \gamma(\text{Policy}, C)_t + \varepsilon_t \dots\dots\dots(5)$$

Simplifying, this gives us the empirical model for estimation as:

$$RAGDP_t = \beta + \beta_i Aid + \beta_i FDI_t + \gamma_i Policy + \gamma_i C_t + \varepsilon_t \dots\dots\dots(6)$$

All the regressors were expressed in natural logarithms with the exception of the policy indices. Thus the model as used in the empirical analysis is specified as:

$$LRAGDP = \beta_0 + \beta_1 LFDI + \beta_2 LAID + \beta_3 LLD + \beta_4 LEX + \beta_5 CC + \beta_6 RoL + \beta_7 Gov + \beta_8 LPOP + \beta_9 LGEXP + \beta_{10} LHC + \beta_{11} LINF + \varepsilon \dots\dots\dots(7)$$

A positive and statistically significant coefficient of the aid variable is interpreted as aid having an impact in promoting economic growth in the region.  $LAGDP$  is the agricultural gross domestic product;  $LFDI$  is the foreign direct investment into the;  $LAID$  is agricultural Aid;  $LLD$  is Land;  $LEX$  is the exchange rate;  $CC$  is control of corruption;  $RoL$  is the rule of law;  $Gov$  is the Governance;  $LOP$  is population;  $LGEXP$  is government expenditure;  $LHC$  is human capital; is  $LINF$  inflation;  $T$  is time trend. The estimated linear function of the above specification was found to give the lead equation, on which the discussions were made.

#### 4.0 Methodology

##### 4.1 Analytical techniques:

##### 4.1.1 Augmented Dickey Fuller (ADF) unit root test and Ordinary Least Squares Regression

This study applied the Augmented Dickey Fuller (ADF) unit root test to examine the unit root properties of the variables prior to the econometric estimation of the specified model. Ordinary Least Squares regression was used to estimate the parameters of the econometric model.

As a first step, time series regression requires that we ascertain the stationarity or otherwise of the time series data. A non-stationary series requires differencing to become stationary. As such, there is the need to assess the order of integration of both the dependent and independent variables in the model under analysis. The order of integration ascertains the number of times a variable will be differentiated to arrive at stationarity. A stationary series is an I(0) series while non-stationary series are I(1). But it is also possible for non-stationary series to be of order 2, that is I(2), or even of a higher order.  $X_t$  is integrated of order  $D_x$  or  $X_t \sim I(D_x)$ , if it is differentiated  $D_x$  times to achieve stationarity (Dickey and Fuller, 1979).

Engle and Granger (1987) provided appropriate tests for stationarity of individual series. Specifically the test procedure includes the estimation of the Dickey-Fuller (DF) and the Augmented Dickey-Fuller (ADF) statistics. The DF and ADF are tests for the null hypothesis that the variable of interest is non-stationary. Thus,

$H_0$ : The variables are not stationary at their levels, i.e. I(1)

$H_a$ : The variables are stationary at their levels, i.e. I(0).

The test procedure is usually indicated in the following type of equation:

For DF test,  $\Delta X_t = \alpha_0 + \delta X_{t-1} + e_t \dots\dots(8)$

For ADF test,  $\Delta X_t = \alpha_0 + \delta X_{t-1} + \sum_{t=1}^k \Delta X_{t-1} + e_t \dots\dots(9)$

Equation is then estimated using OLS regression with each of the variables coming into the model at the point where they become stationary after differencing. The model was estimated using gretl econometric software. The data which spanned a period of 2002 to 2013 was converted to quarterly data before use to obtain a total of 48 observations.

#### 4.1.2 Data and data source

Data on agricultural foreign aid and other related variables which covered a period of 2002 to 2013 were collected from secondary sources. The data on real agricultural GDP, real exchange rate, secondary education (which was used as a proxy for human capital), inflation, control of corruption, governance, rule of law and population were from the World Development Indicators database. The data on foreign aid and FDI were sourced from the Organization for Economic Corporation and Development (OECD) Statistical online database and the United Nations Conference on Trade and Development (UNCTAD) database respectively. Government expenditure data were sourced from the World Development Indicators database (2012).

### 5.0 Results and discussion

#### 5.1 Result of Unit Root Test

The results of the unit root tests are shown in Table 1. The null hypothesis of the presence of a unit root (non-stationarity) was tested against the alternative hypothesis of the absence of a unit root (stationarity). Of all the variable used *LAGDP*, *LAID*, *LLD*, *CC*, *RoL*, *GoV*, *LPOP*, *LGEXP* and *LHC* have unit root properties and became stationary at 1<sup>st</sup> differencing hence have order of integration of 1 or are said to be I (1). However variables *LINF*, *LEX* and *LFDI* were stationary at level, with the order of integration of 0 or I (0). Each data were used in the regression analysis at the level they became stationary.

**Table 1: ADF Unit Root Test Results for Selected Variables**

Variables	t-statistics	t-statistics	Order of integration
	Level	1 <sup>st</sup> diff	
LAGDP	-2.0858	-3.7807**	1
ΔLFDI	-3.8009**	-8.6518***	0
LAID	-2.6969	-3.2474*	1
LLd	-2.2020	-5.6575***	1
ΔLEX	-3.1691*	-3.9507**	0
CC	-0.6903	-3.8600**	1
GoV	-1.2881	-12.5814***	1
LPOP	0.0085	-3.4142**	1
LGEXP	-2.0132	-3.7271**	1
LHC	-2.5778	-3.6180**	1
ΔLINF	-3.6078*	-12.1377***	0

Source: Data Analysis, 2015. \*\*\*, \*\* and \* indicates significant at 1%, 5%, and 10%

#### 5.2 Effect of foreign Agricultural aid and Corruption on Agricultural Growth in Nigeria

##### Discussion of Result

This result is explained on the basis of explanatory power of  $R^2$  and t-test. The value of  $R^2$  is 0.635 which is well fitted, suggesting that about 64% variability in Agricultural growth in Nigeria is explained by the specified variables in the model, the remaining 36% are accounted for by the error term. It has F-value of 6.270 and it is significant at 1% which implies that there is a significant relationship between the explanatory variables and the explained variable.

Foreign direct investment (*LFDI*) into the agricultural of Nigeria has a negative relationship with agricultural growth in Nigeria and it's significant at 1%. The coefficient of foreign direct investment is -0.00063 which negates theoretical expectation, since we expect agricultural production to increase as foreign investment into the agricultural sector increases. A unit increase in the foreign direct investment will cause 0.00063 decreases in the growth of agriculture in the economy. This suggest that foreign direct investment is not sufficient to drive agricultural growth in Nigeria and this might be due to unfavourable investment climate in Nigeria precipitated by bad governance over time. .

Inflation (*LINF*) has a positive relationship with agricultural growth. Although the sign of the parameter negates theoretical expectation; it not significantly affecting the growth of agriculture in Nigeria. The coefficient of inflation is 2.21e-05. The result is the same for Rural Population (*LPOP*) which is a proxy for agricultural labour has a negative relationship with the growth of agriculture and it's not statistically significant. The coefficient of population is -0.199.

Government expenditure (*LGEXP*) has a positive and significant relationship with agricultural growth in Nigeria. The coefficient of government expenditure is 0.025 which implies that a unit increase in

government expenditure will cause 0.025 increase agricultural growth in the economy. We expect that as the amount of money invested into Agricultural production by the government increases, production will in turn increase.

Control of corruption (*CC*) has a negative but significant effect on agricultural growth. Although this is not in line with a – priori expectation, it is a clear picture of what is going on in the Nigeria economy. We expect that agricultural growth in Nigeria will increase as the control of corruption increases but the reverse is the case as we can see from table 2. The coefficient of control of corruption is -0.013 which implies that a unit increase in the control of corruption will cause 0.013 decreases in the growth of agriculture in the economy. Corruption is a bruise of development in Nigeria. This result support the fact that corruption is a major factor responsible for the poor state of agriculture in Nigeria and until it is taken care of or at least kept at the minimal level, there cannot be any sustainable development in Nigeria.

Time trend (*T*) which represents technology was modeled with the series as represented by the time variable serving as a proxy for the impact of technology change on output, i.e. to capture technical progress, productivity, has a coefficient of -6.0087e-05 and it is significant at 5%. This results suggests that technology is has a negative effect on agricultural growth. This is not in line with the theoretical expectation but could be a combination of poor investment into the technological advancement of agriculture in Nigeria and a slow rate of technological adoption in the Nation’s agricultural sector.

Human capital (*LHC*) is negatively affecting the growth of agriculture in the economy and it is significant at 1%. The presence of the negative sign negates theoretical expectation. Human capital is proxy for the percentage of those who have more than secondary education in Nigeria. It is expected to boost agricultural production since it will aid new technological adoption. The coefficient of human capital is -0.086 meaning that a unit increase in the human capital will result in 0.086 decreases in the agricultural growth. This result suggests that agriculture is still predominantly in the hand of uneducated people in Nigeria.

Agricultural Aid (*LAID*) has a positive relationship with the growth of Agricultural production in the economy and this is in line with theoretical expectation. The coefficient of Foreign Agricultural Aid is 0.006 and it is significant at 1%. This which is in agreement with that of Akpokodje and Omojimate (2008) suggests that which implies a unit increase in agricultural aid will cause 0.006 increases in the agricultural growth in Nigeria. The result also shows that agricultural aid is the most important determinant of agricultural growth in Nigeria after government expenditure.

Governance (*GoV*) has a negative effect on the growth of agricultural production in the Nigeria and it is not in line with the a-priori expectation. The coefficient of governance is -0.000637084 and it is not significantly affecting the growth of agriculture.

**Table 2: Regression Result.**  
**(Effect of foreign Agricultural aid and Corruption on Agricultural Growth in Nigeria)**

Variable	Coefficients
LFDI	-0.00063 (-1.870) *
LINF	2.21e-05 (0.7581)
LPOP	-0.199 (-1.406)
LGEXP	0.025 (2.106)**
CC	-0.013 (-1.915)*
Trend	-6.008e-05 (-2.287)**
LHC	-0.086 (-5.706)***
LAID	0.006 (3.432)***
LLd	-0.022 (-1.185)
GoV	-0.00063 (-0.8110)
Const	0.0181 (14.35)
	R <sup>2</sup> = 0.635 F = 4.237(0.0042)

Sources data analysis 2015, t-values in parenthesis

**NB \* indicates Significant at 10%, \*\* indicates Significant at 5%, \*\*\*indicates Significant at 1%**

## Conclusion and Policy recommendations

From the findings above, it can be concluded that Agricultural growth in Nigeria is being positively and significantly driven by foreign agricultural and government expenditure into the agricultural sector while corruption also has a significant and negative effect on the Nigerian agricultural sector. Agricultural growth in Nigeria can be achieved by effective management of fund. Government of Nigeria should encourage aid donors by coordinating and managing aid well. They must as well improve the quality of Governance, help in building a better bureaucracy, increase adherence to the rule of law, drastically reduce corruption, improve the system of accountability and managing expenditure and revenue generation in a manner that will ensure sustainable agricultural growth in Nigeria.

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