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Impact of International Foreign Aids Development on Agriculture in Kogi State Nigeria

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Abstract

The study investigates the impact of international foreign aids and development on agriculture in kabba/bunu LGA. The study relies on secondary data regarding foreign agricultural aid, agricultural GDP, and productivity indicators from countries (Nigeria) 2000-2018 and employ a Generalized Method of Moments (GMM) framework. The study reveals that the average sectoral aid allocation to agriculture was 7% during this period, growing from 18 million USD in 2000 to about 47 million USD in 2018. The econometric analysis suggests that foreign agricultural aid has a positive and significant impact on agricultural GDP and agricultural productivity at 10% significance, and that disaster and conflict also have a positive and significant impact on aid receipt at 5% significance. This latter finding implies that foreign agricultural aid responds to disaster and conflicts in this region. The transparency index has a positive but not significant relationship with foreign agricultural aid, agricultural GDP, and agricultural productivity, while the governance index has a positive and significant relationship with agricultural productivity at 10% significance. The study also reveals that bilateral foreign agricultural aid influences agricultural productivity more than multilateral foreign agricultural aid and that multilateral foreign agricultural aid influences agricultural GDP more than bilateral foreign agricultural aid. Scaling up foreign agricultural aid will increase its impact on agricultural productivity and its contribution to the economy, and sectorial foreign agricultural aid allocation should give priority to factors that will enhance this productivity. For instance, the sectoral allocation to water resources should be increased from the present 8% in order to increase the arable land currently irrigated in the region (4%). Allocation of aid to control plant/post-harvest losses should also be scaled up, as the current level (less than 1%) only reduces crop losses from pests and disease by 50%. Finally, scaling up the funding for research will also be vital to the development of improved seed varieties and the adoption of productivity-enhancing technologies. A sound synergy must be worked out between foreign agricultural aid and domestic agricultural expenditure to support these critical aspects of agriculture in the region.

Keywords: *International foreign aids and Development, Agricultural Investment, Food security.*

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Background to the Study

Substantial increases in agricultural investments in developing countries are needed to combat poverty and realize food security and nutrition goals. Agricultural investment is the most important and most effective strategy for poverty reduction in rural areas, where the majority of the world's poorest people live. Investing in agriculture reduces poverty and hunger through multiple pathways. However, low investment in the agricultural sector and into smallholder farms in particular in most developing countries over the past 30 years has resulted in low productivity and stagnant production. The recent food crisis has exposed these weaknesses; as agricultural production was slow to respond to rise in prices. Yet, the agricultural sector faces a considerable challenge over the next four decades. World agriculture must feed a projected population of 9 billion people by 2050, some 2.5 billion more than today, and most of the growth in population will occur in countries where hunger and natural resource degradation are already rife. Crop and livestock production systems must become more intensive to meet growing demand but they must also become more sustainable. Additional investments of over US$80 billion every year are needed in agriculture to meet targets for reducing poverty and the numbers of malnourished.

Meeting the targets in a sustainable manner that preserves natural resources and is conducive to long-term development will require even more capital. The renewed interest in increasing investment in primary agricultural production in developing countries is therefore a positive development and has been reflected in the statements of the G8 and G20. Agricultural investments by domestic and foreign investors can generate a wide range of benefits such as higher productivity, increased food availability, employment creation, poverty reduction, technology transfer and access to capital and markets. However, these benefits cannot be expected to arise automatically. They will depend to a large extent on a wide range of factors including the investment contract, the type of business model, the linkages with smallholders, and the institutional framework in place in the host country. Further, various organizations have raised concerns on the possible adverse impacts on host countries of some new forms of foreign direct investment (FDI), in particular large-scale land acquisitions. These transactions raise particularly complex economic, social, political and environmental issues.

Flows of food aid from developed countries to developing countries began on a significant scale in the 2010s, primarily as government to government transfers of food aid aimed at augmenting food availability in the recipient country whilst simultaneously disposing of food surpluses in the donor country. This approach, which might be called the traditional approach, gave rise to certain problems and changes have taken place in recent years. Food aid in response to humanitarian emergencies has grown in importance, there is more reliance on cash appropriations and local purchases of food, and multilateral agencies and NGO/CSOs have begun to play a far more important role in the delivery of food aid. In particular, there is more interest in ensuring that food aid can contribute to food security and to the realization of the right to food.

On the contrary, others are of the view that such external resource might not stimulate growth and development (Mosley, 2010; Mosley et al., 2017; Boone,2016; Easterly, 2019; Easterly et al., 2003) but rather, it impedes growth as the funds are mostly diverted to other things, leading

to the so called, aid ineffectiveness. Still, others stress that the effects of ODA markedly different– while one type may boost growth; the other one may not stimulate growth and development in receiving countries (Sender, 2019; Ram, 2004). For instance, Easterly, Levine and Roodman (2003) conclude that the question of aid effectiveness is still inconclusive. Limited studies have attempted to determine the effect of foreign aid on agriculture in the receiving countries (Pack and Pack, 2010; Dewbre et al., 2007; Akpokodje and Omojimite, 2008; Islam, 2011; Kaya et al., 2012; Alabi, 2014). Even though there are many studies about the effect of foreign aid on economic growth, in general, research on the effect of aid on agriculture, especially in Nigeria is still scanty. The present contribution intends to fill this vacuum. Against this background, this study attempt to determine the effect of agricultural ODA on crop production in Kabba/Bunu LGA.

Literature Review and Conceptual Framework

Concept of Agricultural Investment on Food Security

Agricultural investment is the most important and most effective strategy for poverty reduction in rural areas, where the majority of the world's poorest people live (World Bank, 2008, FAO, 2012). Investing in agriculture reduces poverty and hunger through multiple pathways. Farmers invest to enhance their productivity and incomes. From society's point of view, this in turn generates demand for other rural goods and services and creates employment and incomes for the people who provide them, who tend to be the landless rural poor. These benefits ripple from the village to the broader economy. Agricultural investment is also essential to eradicating hunger through all of the dimensions of food and nutrition security. Agricultural investment by farmers or the public sector that increases productivity at the farm level can also increase the availability of food on the market and help keep consumer prices low, making food more accessible to rural and urban consumers (Alston *et al.*, 2000). Lower priced staple foods enable consumers to supplement their diets with a more diverse array of foods, such as vegetables, fruit, eggs, and milk, which improves the utilization of nutrients in the diet (Bouis, Graham and Welch, 2000). Finally, agricultural investments can also reduce the vulnerability of food supplies to shocks, promoting stability in consumption.

Insufficient investment in the agricultural sector of most developing countries over the past 30 years has resulted in low productivity and stagnant production. World agriculture must meet the major challenge of feeding some 2.5 billion more people by 2050. Adding to this challenge, most of the growth in population will occur in countries where hunger and natural resource degradation are already widespread. Crop and livestock production systems must become more intensive to meet growing demand but they must also become more sustainable (FAO, 2011, Save and Grow). Sustainable intensive production systems are capital-intensive; they require more physical, human, intellectual and social capital in order to sustain and rebuild the natural capital embodied in land and water resources. Net investments of at least US$83 billion annually are needed in agriculture to meet targets for reducing poverty and the numbers of malnourished (Schmidhuber, Bruinsma and Boedeker, 2009). Doing so in a sustainable manner that preserves natural resources and is conducive to long-term development will require even more funds. Increased investment by the public sector in developing countries will be necessary, which implies a reversal of the declining trend observed over the past

decades. The share of public spending on agriculture in developing countries has fallen to around 7 percent, and even less in Africa (Hallam, 2011). Investment is stagnant or falling in regions where hunger is most widespread (FAO, 2012). Higher and more volatile food prices have reawakened policymakers to the importance of agriculture, and they have responded by increasing commitments to supporting the sector. This renewed attention to agriculture offers an opportunity to prepare for these challenges. Public investment by governments plays an essential role in creating the necessary conditions and enabling environment in which farmers can thrive, and in catalyzing and channeling private investment towards socially beneficial outcomes. The public sector also provides public goods which benefit society but for which private incentives are lacking.

The Fundamental Need for Investments by Farmers

However, public-sector investments alone will not be sufficient. An increase in investment by the private sector is needed, in particular a rise in the investments made by farmers themselves, who account for the bulk of investment in agriculture. A recent study shows that farmers are by far the largest investors in agriculture (Lowder, Carisma and Skoet, 2012). Annual investment in on-farm agricultural capital stock exceeds government investment by more than 3 to 1 and other resource flows by a much larger margin. On-farm investments are more than twice as important as all other sources of investment combined.

Particular attention must be paid to ensuring that smallholders, many of whom are women, are able to invest on their farms and benefit from other public and private investment. This requires the existence of an enabling investment climate and the provision of public goods such as research and extension, market institutions and infrastructure, training and education, and risk management tools.

A Complementary Role for Foreign Investment

However, in spite of the priority given to agriculture, many developing countries have limited financial capacity to fill the investment gap. Commercial bank lending to agriculture is less than 10 percent in sub-Saharan Africa, while microfinance loans are usually too small and not suited to capital formation in agriculture (Da Silva and Mhlanga, 2009). It is unlikely that the solution will come from international donors either, as the share of official development assistance going to agriculture has fallen from around 10 percent to 5 percent (Hallam, 2011). Recent summits of the G8 and G20 have made strong commitments to supporting increased investment in developing country agriculture for food security. This is a positive development. Nevertheless, in view of the unfolding economic crisis in the major industrialized nations and the slowing of growth in large emerging economies, international aid is unlikely to increase sufficiently to meet the investment needs in the short and medium terms.

Given the limitations of alternative sources, foreign direct investment could make a contribution to bridging the investment gap in developing countries' agriculture. The available data show that agricultural FDI is very small compared with domestic agricultural investment. Further, the agricultural sector still accounts for a very small percentage of total FDI inflows in most developing countries. A review of case studies on sub-Saharan Africa

suggests that less than 5 percent of FDI goes to agriculture (Gerlach and Liu, 2010). There is a potential for growth if more investments can be directed to the sector. While FDI cannot be expected to become the main source of capital, it can potentially generate various types of benefits for the agricultural sector of the host country such as employment creation, technology transfer and better access to capital and markets. However, these benefits cannot be expected to arise automatically and the risks discussed above are real. Consequently, the challenge for policy makers, development agencies and local communities is to maximize the benefits of foreign agricultural investment while minimizing its risks. This requires the capacity to orient foreign investments towards the right type of projects. Whether this objective can be met will depend on a large number of factors, among which the legal and institutional framework in place in the host country and the local context are critical.

The Study Area

Location

Kabba is a town in Kogi State in mid west Nigeria. It lies near the Osse River, at the intersection of roads from Lokoja, Okene, Ogidi, Ado-Ekiti, and Egbe; Fig 1. The town is about 295 kilometers away from Abuja. Coordinates: cities 7°50′00″N 6°04′00″E on the map of Nigeria.

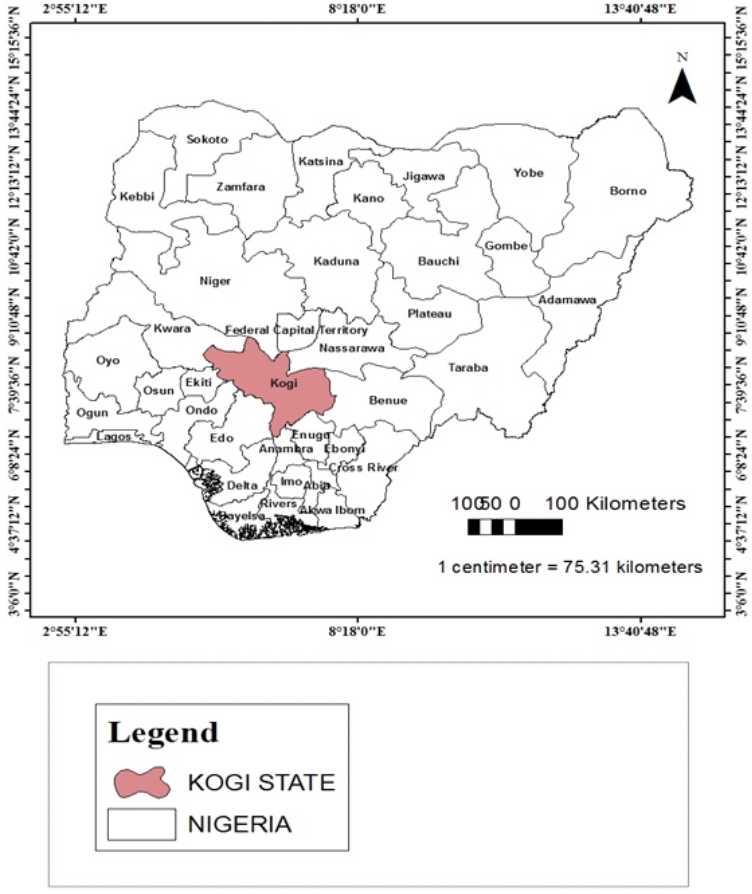

Fig 1: Map of Nigeria showing Kogi State

Kabba/Bunu is one of the 21 Local Government in Kogi State created in 1991 fig 2

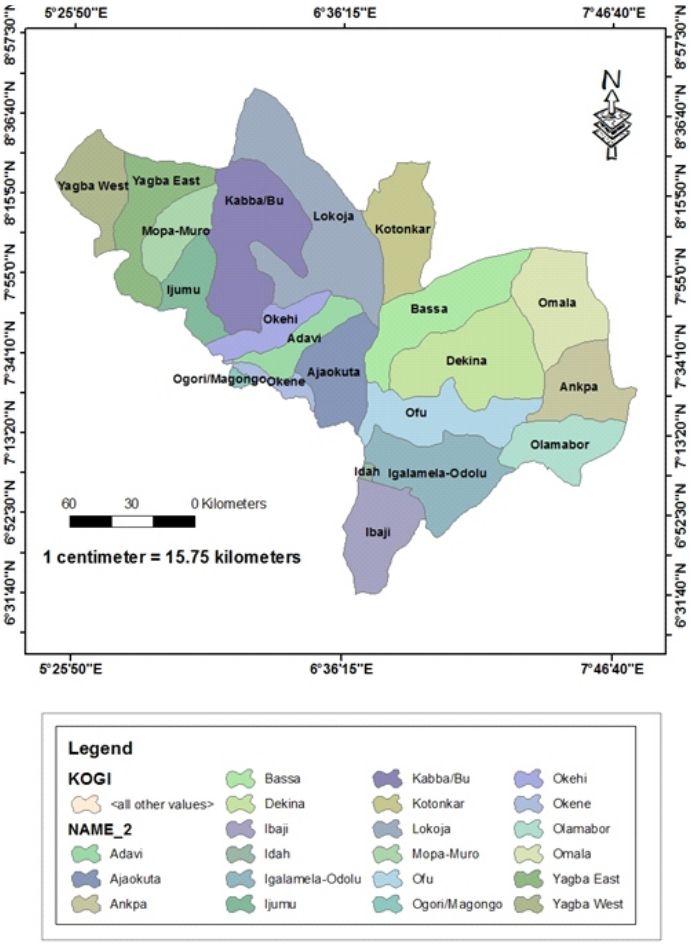

Fig 2: Map of Kogi showing Kabba LGA

Climate

In Kabba, the wet season is warm, oppressive, and overcast and the dry season is hot, humid, and partly cloudy. Over the course of the year, the temperature typically varies from *63°F* to *92°F* and is rarely below *57°F* or above *97°F*. Based on the beach/pool score, the best time of year to visit Kabba for hot-weather activities is from *early November* to *late February*. The hot season lasts for 2.8 months, from January 25 to April 18, with an average daily high temperature above 90°F. The hottest day of the year is March 1, with an average high of 92°F and low of 70°F.

The cool season lasts for 4.0 months, from June 22 to October 21, with an average daily high temperature below 83°F. The coldest day of the year is December 31, with an average low of 63°F and high of 87°F. In Kabba, the average percentage of the sky covered by clouds experiences *significant* seasonal variation over the course of the year. The *clearer* part of the

year in Kabba begins around *November* 12 *and lasts for* 3.1 months*, ending around* February 15. *On* December 27*, the* clearest day *of the year, the sky is* clear*,* mostly clear*, or* partly cloudy 56% *of the time, and* overcast *or* mostly cloudy 44% *of the time.*

Population
It has an area of 2,706 km^2 (1,045 sq mi) and a population of 145,446 at the 2006 census

Fig 3: Map of Kabba

Research Methodology
Research Design
Descriptive survey design is adopted for the study. This method is used to make the researchers obtain information relevant to the research and to describe situation as they exist.

Population of the Study
Population can be described as a total number of element that has the characteristic or feature which the researchers want to study. Population is the total group of individual who sit into a group by some pre-set criteria. It is a theoretical specification of the universe. The population of the study comprised Kabba-Bunu LGA of Kogi State; hence, the population in terms of numbers comprises of 200.

Mode of Specification
The data used for this study are essentially secondary in nature: foreign aid for agriculture (international, multilateral, and total) and agricultural growth indicators (agricultural GD and agricultural productivity from 2010-2018 for 47 countries in SSA6. Foreign agricultural aid (actual disbursement flows) were obtained from the Organization for Economic Cooperation and Development's Development Assistance Committee (OECD/DAC) database, and agricultural productivity (cereal yield), agricultural GDP, rainfall, and transparency indices were extracted from the World Bank's World Development Indicators (WDI, 2012). Government effectiveness data were obtained from Worldwide Governance

Indicators (2012) as provided by the World Bank,8 while natural disaster and conflict indicators were derived from the Center for Research on the Epidemiology of Disasters. Government effectiveness transparency indicators were included in the aid equation because the positive impact of foreign aid on economic growth is dependent on good economic policy (Alesina and Weder, 2009; de la Croix and Delavallade, 2013). The relevant data were analyzed using the Granger Causality test, Generalized Method of Moments (GMM), and Variance Decomposition methodologies.. Analysis of Variance (ANOVA) was also employed to test for significant differences in the average foreign agricultural aid received by Nigeria, Kogi State.

Method of Data analysis

The data used for this study are mainly secondary in nature. Time series data for the period between 1999 and 2018 were obtained from Food and Agriculture Organization of the United Nations (FAO), and Central Bank of Nigeria statistical bulletins. Statistical Software, Gretl and EViews, are used for the empirical analysis. To determine the effect of foreign aid on agricultural (crop) production in Nigeria, multiple regression models is mathematically specified as follows:

Data Presentation

This chapter deals with the result and discussion of the data collected. The data analysis is done with reference to the three (3) research questions formulated to guide the study. With the use of ANOVE, regression analysis, t-test and f-test

Table 1: Trend in Foreign Aid (Average) Disbursed to Agriculture in Social Security Administration (SSA) (Constant 2018 USD millions)

Year	Total Sector Allocable	Agriculture Allocation	% Agricultural Aid
2002	268.08	18.22	6.80
2003	291.04	21.23	7.29
2004	333.28	22.76	6.83
2005	353.52	23.45	6.63
2006	392.45	25.83	6.58
2007	457.51	30.85	6.74
2008	510.79	32.93	6.45
2009	564.88	44.08	7.80
2010	611.74	46.62	7.62
2011	420.37	29.55	7.03
2012	611.74	46.62	7.80
2013	268.08	18.22	6.45
2014	100	7.03	-
2015	392.45	25.83	6.58
2016	457.51	30.85	6.74
2017	510.79	32.93	6.45
2018	99.7	97.9	-

Source: Computed by the Author

Table 1 shows that agricultural policy and administration comprised 22% of Social Security Administration (SSA)'s agricultural aid between 2002 and 2018; this compares favorably with the global average of about 26% (estimated by Islam, 2019). Nigeria, Kogi State, on the other hand, devoted only about 17% of its agricultural aid to policy and administration management in 2005-2008, as estimated by Coppard (2009) and indicated generally, there has been a global decline in agricultural aid allocation to policy and administration, possibly due to the fact that administrative costs can be abused or misappropriated by local and foreign aid administrators, thus increasing the effort and cost associated with ensuring aid effectiveness.

Agricultural development comprised about 25% of total agricultural aid in SSA in 2018, an increase from about 12% (Coppard, 2009) in 2002. This could be an appropriate level of allocation if the funds are used to improve soils, to buy improved seeds, and to supply farmers with appropriate new technologies. The global average allocation to agricultural development was 13% (Coppard, 2009), while allocation to agricultural development in Kabba, Bunu, Otu and Ayetoro was about 22%.

Capital constraint is a major challenge facing African farmers, and the allocation of 1.34 % of total agricultural aid to finance may not be able to adequately solve this problem. Global agricultural aid allocation to agricultural finance was about 2% in the period under consideration, suggesting the need to scale up agricultural finance in Social Security Administration (SSA). This becomes even more important when you compare Social Security Administration (SSA) 1.34% allocation with that of Kogi state, which stands at about 3%. The importance of research and development for agricultural growth and development cannot be overstated. Table 3 shows that about 9% of agricultural aid in Social Security Administration (SSA) was allocated to research in the study period. This is an upward movement when you compare it with the global average of about 7%; however, there is evidence of stagnation if this is compared with the 7% allocation estimated for Social Security Administration (SSA) in 2005-2008.

Table 2: The Average Utilization of Foreign agricultural aid (Constant 2010 USD millions)in Social Security Administration (SSA) and Kogi state(2002 to 2018)

Nigeria				Kogi State		
Utilization	**Mean**	**%**	**Standard Deviation**	**Mean**	**%**	**Standard Deviation**
Agrarian Reform	5.18	0.35	2.58	8.50	1.65	5.13
Cooperative	21.56	1.46	7.39	1.39	0.27	0.84
Agricultural Development	366.08	24.78	148.68	111.85	21.66	33.69
Agric Extension	65.69	4.45	15.12	9.53	1.85	2.13
Agric Finance	19.85	1.34	17.04	15.30	2.96	16.41
Agric Input	78.02	5.28	89.78	15.52	3.00	11.09
Agric Policy and Administration	318.69	21.57	145.83	45.08	8.73	20.01
Agric Research	125.94	8.52	86.75	30.45	5.90	29.78
Agric Service	59.86	4.05	20.24	3.76	0.73	1.96
Training	23.95	1.62	16.31	4.71	0.91	1.29
Alternative Development	7.53	0.51	12.72	1.89	0.37	1.73
Export Crop Production	36.17	2.45	42.03	7.60	1.47	7.16
Food Crop Production	111.11	7.52	29.95	16.86	3.26	7.03
Land Development	55.27	3.74	13.17	68.63	13.29	31.99
Livestock	55.99	3.72	9.36	12.28	2.38	2.97
Post Harvest and Processing	11.18	0.96	7.11	3.09	0.60	1.40
Veterinary	7.63	0.52	3.47	9.71	1.88	6.45
Agricultural Water Resources	108.92	7.57	33.18	150.24	29.09	77.48
Total Agric aid	1477.60	100.00	503.23	516.43	100.00	101.51

Source: Computed by the Author

The causality test presented in Table 2 indicates that there is neither uni-directional nor bi-directional causality between total foreign agricultural aid and agricultural productivity in Social Security Administration (SSA). It also reveals that total foreign agricultural aid does not influence agricultural contribution to GDP in the region. However, when disaggregated into international and multilateral foreign agricultural aid, I find that multilateral foreign aid influences agricultural GDP and international aid influences agricultural productivity. This is in accordance with the expectation of Njeru (2003), who was of the opinion that the economic effect of foreign aid may be different when disaggregated into international and multilateral aid. International aid may significantly influence agricultural productivity because it may be more tangential to the particular agricultural sectors and/or and subsectors that directly affect productivity factors

Summary, Conclusion and Recommendations

The econometric analysis suggests that foreign agricultural aid has a positive and significant impact on agricultural GDP and agricultural productivity at the 10% significance level. My results also show that disaster/conflict have a positive and significant impact on aid receipts at

the 5% significance level, implying that aid responds to disaster and conflicts in the region. The transparency index has a positive but non-significant relationship with foreign agricultural aid, agricultural GDP, and agricultural productivity, but the governance index has a positive and significant relationship with agricultural productivity at the 10% significance level.

The study also reveals that international foreign agricultural aid influences agricultural productivity more than multilateral foreign agricultural aid, while multilateral foreign agricultural aid influences agricultural GDP more than international foreign agricultural aid. This means that while international agricultural aid can be more influential for agricultural productivity, multilateral aid can have greater influence on agriculture's contribution to the economy than the international agriculture aid.

Recommendations

This finding may indicate that it is not only the amount of aid that can influence agriculture, but that the nature, origin, and purpose of the aid can be important in measuring its impact.

1. The governance index coefficient is not significant in the international agricultural aid equation, but it is significant in the multilateral agricultural aid equation, which implies that issues of governance may be more of importance for the receipt of multilateral aid.
2. It will be important to scale up foreign agricultural aid in order to increase its impact on agricultural productivity and its contribution to the economy of Social Security Administration (SSA). However, the sectoral foreign agricultural aid allocation should give priority to factors that will enhance agricultural productivity in Social Security Administration (SSA). For instance, the allocation to water resources should be increased from its current level of 8% in order to increase the arable land irrigated in the region, which currently stands at 4%. Similarly, less than 1% of foreign agricultural aid is allocated to plant/post-harvest loss in Social Security Administration (SSA); this amount should be increased as well.
3. The scaling up of aid will also be important in developing improved seeds and assisting farmers to adopt enhanced technologies. In all, a good synergy must be established between foreign agricultural aid and domestic government expenditures on agriculture in order to emphasize these critical aspects of agriculture in the region.

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Appendix

Table 1.

	Agricultural ODA (% of total ODA disbursement) by all donors				**Disbursed agricultural ODA (US$, millions, current) by all donors**				**Growth rate of agricultural ODA Disbursement (%) by all donors**			
YEAR	Kabba	Bunu	Otu	Ayetoro	Kabba	Bunu	Otu	Ayetoro	Kabba	Bunu	Otu	Ayetoro
2000	6.6	8.8	3.4	22.2	0.9	13.8	7.2	34.3	-85.9	68.8	-2.4	-38.6
2001	0.3	19.4	6.1	16.6	0.0	11.8	6.0	17.8	-95.5	-14.7	-17.5	-48.2
2002	0.5	7.2	4.3	12.3	0.1	12.1	1.9	21.1	50.0	2.7	-68.2	19.0
2003	0.6	12.2	6.3	13.7	0.1	9.8	9.0	21.1	50.0	-19.5	373.7	0.0
2004	3.2	6.6	7.1	11.9	3.9	17.0	26.4	45.3	4.27	7.8	73.7	193.3
2005	5.6	7.0	6.7	8.7	6.3	14.4	33.6	35.6	59.9	-14.9	27.4	-21.4
2006	2.7	7.0	3.9	6.6	3.1	73.8	20.5	24.7	-50.3	412.0	-38.9	-30.7
2007	1.3	5.4	4.5	6.5	5.3	19.8	36.0	38.1	70.6	-73.2	75.1	54.5
2008	1.4	1.7	2.1	4.8	8.5	3.9	39.1	33.0	58.2	-80.5	8.6	-13.6
2009	0.3	1.1	4.5	3.4	16.3	2.6	63.0	26.1	92.4	-33.9	61.2	-20.8
2010	0.4	4.1	1.1	7.2	44.9	13.7	60.2	74.8	176.1	436.9	-4.4	186.4
2011	1.2	1.9	6.8	6.3	28.0	5.3	68.2	91.1	-37.6	-61.7	13.1	21.7
2012	1.9	8.9	10.1	6.9	27.8	93.3	115.4	104.7	-0.7	1.677	69.3	15.0
2013	2.4	2.3	11.2	5.6	44.8	62.4	182.9	112.6	60.9	-33.1	58.4	7.5
2014	3.7	6.8	15.0	7.7	83.4	47.5	244.8	125.7	86.3	-23.9	33.9	11.6
2015	4.9	3.4	13.2	6.1	102.7	53.3	242.1	159.6	23.1	12.2	-1.1	27.0
2016	4.4	0.4	11.1	5.1	92.5	17.7	210.3	156.2	-9.9	-66.8	-13.1	-2.1
2017	4.2	2.1	9.3	5.3	131.0	42.9	139.2	183.0	41.7	142.5	-33.8	17.1
2018	6.2	5.8	11.8	5.8	208.0	78.5	147.9	176.3	58.7	83.0	6.3	-3.7

Source: Author's compiled from FAO, 2019

Table 2: Trend in Foreign Aid (Average) Disbursed to Agriculture in Social Security Administration (SSA) (Constant 2018 USD millions)

Year	Total Sector Allocable	Agriculture Allocation	% Agricultural Aid
2002	268.08	18.22	6.80
2003	291.04	21.23	7.29
2004	333.28	22.76	6.83
2005	353.52	23.45	6.63
2006	392.45	25.83	6.58
2007	457.51	30.85	6.74
2008	510.79	32.93	6.45
2009	564.88	44.08	7.80
2010	611.74	46.62	7.62
2011	420.37	29.55	7.03
2012	611.74	46.62	7.80
2013	268.08	18.22	6.45
2014	100	7.03	-
2015	392.45	25.83	6.58
2016	457.51	30.85	6.74
2017	510.79	32.93	6.45
2018	99.7	97.9	-

Source: Computed by the Author

Table 3: The Average Utilization of Foreign agricultural aid (Constant 2010 USD millions) in Social Security Administration (SSA) and Kogi state (2002 to 2018)

Nigeria				Kogi State		
Utilization	**Mean**	**%**	**Standard Deviation**	**Mean**	**%**	**Standard Deviation**
Agrarian Reform	5.18	0.35	2.58	8.50	1.65	5.13
Cooperative	21.56	1.46	7.39	1.39	0.27	0.84
Agricultural Development	366.08	24.78	148.68	111.85	21.66	33.69
Agric Extension	65.69	4.45	15.12	9.53	1.85	2.13
Agric Finance	19.85	1.34	17.04	15.30	2.96	16.41
Agric Input	78.02	5.28	89.78	15.52	3.00	11.09
Agric Policy and Administration	318.69	21.57	145.83	45.08	8.73	20.01
Agric Research	125.94	8.52	86.75	30.45	5.90	29.78
Agric Service	59.86	4.05	20.24	3.76	0.73	1.96
Training	23.95	1.62	16.31	4.71	0.91	1.29
Alternative Development	7.53	0.51	12.72	1.89	0.37	1.73
Export Crop Production	36.17	2.45	42.03	7.60	1.47	7.16
Food Crop Production	111.11	7.52	29.95	16.86	3.26	7.03
Land Development	55.27	3.74	13.17	68.63	13.29	31.99
Livestock	55.99	3.72	9.36	12.28	2.38	2.97
Post Harvest and Processing	11.18	0.96	7.11	3.09	0.60	1.40
Veterinary	7.63	0.52	3.47	9.71	1.88	6.45
Agricultural Water Resources	108.92	7.57	33.18	150.24	29.09	77.48
Total Agric aid	1477.60	100.00	503.23	516.43	100.00	101.51

Source: Computed by the Author

Table 4: Pair-wise Granger Causality of Foreign Aid, Agricultural Productivity, Agricultural Production and Agriculture GDP in Social Security Administration (SSA)

Null Hypothesis	Observation	F-Statistic	Probability
Log total Agric. foreign aid does not cause Agric. productivity	398	1.0639	0.3461
Agric. Productivity does not cause Log total Agric foreign aid		0.0839	0.9195
Log total Agric. foreign aid does not cause Agriculture GDP	305	0.5103	0.6008
Agriculture GDP does not cause Log total Agric foreign aid		2.0045	0.1365
Log Multilateral Agric. foreign aid does not cause Agric. productivity	313	0.2256	0.7982
Agric. Productivity does not cause Log Multilateral Agric. Foreign		0.3702	0.6909
Log Multilateral Agric. foreign aid does not cause Agriculture GDP	243	2.4156**	0.0915
Agriculture GDP does not cause Log Multilateral Agric. Foreign		2.0035	0.1371
Log International Agric. foreign aid does not cause Agric. productivity	398	2.7221**	0.0670
Agric. Productivity does not cause Log International Agric. Foreign		0.1088	0.8870
Log International Agric. foreign aid does not cause Agriculture GDP	305	0.3735	0.6887
Agriculture GDP does not cause Log International Agric. Foreign		2.5051**	0.0834

Source: Computed by the Author**Significant at 10%

Table 5: GMM Estimates of Impact of Agriculture Total, International and Multilateral Aid on Agricultural Productivity in Social Security Administration (SSA)

Total Agric Aid Foreign Aid		**International Agric Foreign Aid**			**Multilateral Agric Foreign Aid**	
Variable	Log Agric Foreign Aid	Agric Productivity	Log Agric Foreign Aid	Agric Productivity	Log Agric Foreign Aid	Agric Productivity
Constant	0.7170 (1.1946)	98.5571(0.5130)	0.3206(0.5102)	137.5706(0.6995)	0.8339(1.10079)	1.8183(0.0090)
Log Agric Aid (-1)	0.6329(7.7351)*	16.1323 (0.9225)	0.5828(7.8362)*	26.3525 (1.4413)	0.5806(8.5318)*	3.8387(0.2894)
Log Agric Aid (-2)	0.0694(1.0329)	24.3453(1.7303)**	0.1144(1.7989)**	23.1260(1.6391)**	0.0614(0.8101)	20.3643(1.2466)
Agric Productivity(-1)	0.0002(1.7060)**	0.6259(6.7267)*	0.0002(-1.2771)	0.6311(6.9523)*	0.0004(1.9054) **	0.6013(0.9532)
Agric Productivity(-2)	0.0001(0.3838)	0.0146(0.3148)	0.0001(0.1423)	0.01610(0.3456)	0.0002(0.7866)	0.0103(0.1347)
Rainfall	-0.0006(-1.8618) **	0.4723(3.4739)*	-0.0007(-2.3542)*	0.4771(3.5343)*	-0.0006(-1.2431)	0.4956(3.5527)*
Rainfall(-1)	0.0007(2.4251)*	-0.2550(1.9036) **	0.0008(2.8208)*	-0.2661(-2.0326)	0.0001(1.8488) **	-0.2684(-1.8100) **
Disasters/Conflicts	0.4352(3.5132)*	-9.3548(-0.22641)	0.4673(3.5461)*	1.6150(0.0405)	0.4569(3.0296)*	-29.6457(-0.6139
Transparency Index	0.0337(0.2452)	25.2039(0.5333)	0.0962(0.6606)	25.4860(0.5289)	-0.0479(-02273)	43.1198(0.8518)
Time	0.0892(3.0663)*	25.5714(2.2512)*	0.0854(3.0575)*	25.3252(2.2243)*	0.1115(2.7474) *	28.9280(2.2815)*
Governance Index	0.2952(1.3250)	95.9826(1.6044)**	0.2333(0.9956)	107.2767(1.7263)**	0.5342(1.8854)**	41.9520(0.7324)
Weather Shock	-0.2908(-2.4912)*	-58.8699(-1.3925)	-0.3084(-2.9777)*	-66.2285(-1.5561)	-0.2856(-1.7817) **	-71.8691(-1.6667)**
Wald Tests for Joint Significance						
Lagged Agric Aid		3.54*		3.35*	1.80**	
Lagged Productivity		729.00*	729.00*	729.00*	729.00*	
Rainfall	1008.00*	1008.00*	1007.00*	1007.00*	1008.00*	1008.00*
Lagged Rainfall	1007.00*	1007.00*	1006.00*	1006.00*	1007.00*	1007.00*
Disasters/Conflicts	-4.00*	-4.00*	5.00*	5.00*	4.00*	4.00*
Transparency Index	-2.500*	-2.500*	3.00*	3.00*	2.5.00*	2.5.00*
Time	3.00*	3.00*	2.00*	2.00*	3.00*	3.00*
Governance Index	-8.13*	-8.13*	8.13*	8.13*	8.13*	8.13*
Weather Shock	-7.91*	-7.91*	-8.91*	-8.91*	-8.91*	-8.91*

Source: Author's Computation* Significant at 5%. ** Significant at 10% Figures in Parenthesis are the t-Statistics

Table 6: GMM Estimates of Impact of Agriculture Total, International and Multilateral Aid and Agriculture GDP in Social Security Administration (SSA)

Total Agric Aid Foreign Aid		**International Agric Foreign Aid**			**Multilateral Agric Foreign Aid**	
Variable	**Log Agric Foreign Aid**	Agric GDP	**Log Agric Foreign Aid**	Agric GDP	**Log Agric Foreign Aid**	Agric GDP
Constant	0.3691(0.5235)	6.2492(1.4737)	0.1694(0.2292)	5.2985(1.2519)	0.6870(0.7565)	7.4098(1.4274)
Log Agric Aid (-1)	0.5763(5.4445)*	0.7141 (1.7225)**	0.5185(5.3911)*	0.1221 (0.2307)	0.5820(8.0485)*	0.6802(1.9239)*
Log Agric Aid (-2)	0.1341(1.6236)**	0.4424(1.5554)	0.2155(2.8495)*	0.3353(0.9918)	0.0248(0.3096)	0.8314(2.0797*
Agric GDP (-1)	0.01423(1.6209)**	0.7972(12.8344)*	0.0137(1.5870)	0.8192(12.2552)*	0.0136(1.1383)	0.8195(13.3214)*
Agric GDP (-2)	0.0060(0.7235)	0.0109(0.2464)	0.0073(0.8266)	0.0119(0.2399)	0.0050(0.4577)	0.0009(0.0170)
Rainfall	-0.0006(-1.2341)	-0.0024(0.4586)	-0.0007(-1.6330) **	0.0022(0.4462)	-0.0006(-0.6885)	0.0036(0.6136)
Rainfall(-1)	0.0006(1.2312)	0.0017(0.3454)	0.0004(1.5763)	-0.0016(-0.3184)	0.0007(0.8633)	-0.0030(-0.5163)
Disasters/Conflicts	0.3707(2.7325)*	-0.2241(0.2360)	0.4384(2.9879)*	0.1647(0.1752)	0.4356(2.6292)*	0.1691(0.1557)
Transparency Index	0.0609(0.3770)	0.1520(0.1540)	0.1444(0.8482)	0.2883(0.2876)	-0.0633(-0.2747)	-0.0830(-0.0759)
Time	0.0842(2.3411)*	-0.7144(-2.5934)*	0.0823(2.5242)*	-0.6862(-2.4881)*	0.1020(2.0186)*	-0.5981(-2.1250)*
Governance Index	0.2421(0.8027)	2.0823(1.0636)	0.1221(0.4094)	2.4026(1.2320)	0.5938(1.6929)**	-1.2920(0.6506)
Weather Shock	-0.3266(-2.0651)*	-0.9296(-0.8477)	-0.3371(-2.4968)*	-1.0480(-0.9336)	-0.2819(-1.2996)	-0.7489(-0.6957)
Wald Tests for Joint Significance						
Lagged Agric Aid	3.55*		3.35*		1.79*	
Lagged Agric GDP	5.64*	5.64.00*		5.64*	8.84*	
Rainfall	1008.00*	1008.00*	1008.00*	1008.00*	1008.00*	1008.00*
Lagged Rainfall	1007.00*	1007.00*	1007.00*	1007.00*	1007.00*	1007.00*
Disasters/Conflicts	-4.00*	-4.00*	-4.00*	-4.00*	4.00*	4.00*
Transparency Index	-2.500*	-2.500*	-2.50*	-2.50*	2.5.00*	2.5.00*
Time	3.00*	3.00*	3.00*	3.00*	3.00*	3.00*
Governance Index	-8.13*	-8.13*	-8.13*	-8.13*	8.13*	8.13*
Weather Shock	-7.91*	-7.91*	-7.91*	-7.91*	-7.91*	-791*

Source: Author's Computation* Significant at 5%. Figures in Parenthesis are the t-Statistics

Table 7: Analysis of Variance of Regional Means of Some Selected Variables

Regions	**Log Agric Total Aid**	**Log Agric International Aid**	**Log Agric Multilateral Aid**	**Disaster (%)**	**Agric Productivity**	**Agric GDP**	**Weather Shock**	**Transparency Index**	**Gov Index**
Central Kogi	1.70	1.20	0.81	26.25	1221.82	19.15	1.11	2.53	-1.17
South Kogi	1.27	0.92	0.10	20.20	1207.24	6.53	0.77	3.50	0.04
West Kogi a	2.71	2.00	1.84	20.20	1152.87	29.48	0.76	2.90	-0.75
East Kogi	2.96	2.18	2.36	37.24	1221.82	29.12	0.53	2.83	-0.79
F-Value	18.53*	10.67*	19.52*	3.99*	0.22	45.19*	15.90*	10.70*	50.20*

Source: Computed by the Author * Significant at 5%