NIGERIA
IFPRI

STRATEGY SUPPORT PROGRAM | WORKING PAPER 60 | December 2018

Agricultural public expenditures, sector performance, and welfare in Nigeria

A state-level analysis

George Mavrotas, Tewodaj Mogues, Motunrayo Oyeyemi, Jennifer Smart, and Zhe Xiong

TABLE OF CONTENTS

LIST OF FIGURES

ABSTRACT

Building on the work of earlier studies that looked at trends in and returns to federal public expenditures on agriculture in Nigeria, this paper explores spending patterns at the sub-national state level over a nine-year period, as well as trends in agricultural and economic performance and indicators of household welfare. Our examination focuses on two groupings of states – the full 37 state units of Nigeria (the 36 states, plus the Federal Capital Territory, Abuja); and the seven states that are the focus in Nigeria of the Global Food Security Strategy (GFSS) of the United States Agency for International Development. Sub-national agricultural spending as a share of aggregate agricultural spending in Nigeria is large, given the stronger role for sub-national governments in agriculture than is the case in other sectors. However, we find that the share of state-level expenditures on agriculture as a share of aggregate state-level expenditures is still relatively low, an average of 3.86 percent over the period 2007 to 2015. While the prioritization of agriculture spending varies greatly year by year, the variation over time does not have a discernible long-run upwards or downwards trend. We also find that agricultural expenditures are more capital intensive than are overall public expenditures at state level, but that capital expenditures as a share of total agriculture spending has decline over the last decade, as is the case overall in Nigeria's industrial sectors. We conclude that efforts to strengthen state-level agricultural spending in Nigeria merits greater attention, while putting in place measures to ensure improved effectiveness in any such spending.

Keywords: agricultural public expenditures, sector performance, state analysis, Global Food Security Strategy (GFSS) focus states, Nigeria

1. INTRODUCTION

Agricultural transformation has become a policy priority in many developing countries, particularly considering the Sustainable Development Goals of zero hunger and ending poverty. In Africa, the Comprehensive Africa Agriculture Development Program (CAADP), initiated in 2003, has been a key continent-wide initiative focusing on agricultural transformation. CAADP has played an important role in helping country governments make their agricultural policy processes more transparent, inclusive, and evidence-based. With this momentum, many African countries have planned their own agricultural transformation pathways in recent years. Nigeria, with the initiation of the Agricultural Transformation Agenda (ATA) in 2011 and, more recently, with the Agriculture Promotion Policy (APP) of the Buhari administration, is no exception (FMARD 2016).

The largest country in Africa both by population and by size of the economy, Nigeria has abundant agricultural resources, human capital, and a very diversified and rich natural resource base. At the same time, however, the economy is influenced by developments in the global economy, particularly since it depends on oil exports for most of its revenue. Oil has provided most government funding from the 1970s (Collier 1988) through today (IMF 2016). Global oil prices fell by about 70 percent between 2014 and 2016. This raised fiscal pressures on the revenue side. As a result, Nigeria was thrust into a macroeconomic crisis in 2014. Arndt et al. (2018a; b) have recently argued that policymakers responded effectively to the economic shock, mainly through import compression. However, the scope for continued import compression is now distinctly limited; for Nigeria to grow and prosper, long-discussed diversification of the export base must occur via rapid expansion of non-oil exports.

In response to volatility in macroeconomic conditions and the associated challenging fiscal conditions caused by fluctuations in the global oil market, agricultural policymakers in Nigeria have promoted reinvigoration of the agricultural sector as an essential part of a national strategy for more sustainable economic growth. In this context, the APP, and before that, the ATA, have promoted agricultural sector investment in view of expected rising demographic pressures. Such advocacy is also consistent with the ideas laid out in the World Bank's World Development Report 2008, which endorsed agricultural sector growth as fundamental for achieving long-run goals of reductions in poverty and food insecurity, especially in countries with relatively high poverty rates, large agricultural rural employment shares, and low agricultural productivity, like Nigeria (World Bank 2007a). Agriculture is often considered to be the sector with the greatest potential for pro-poor growth in Nigeria. While it only contributes 21 percent of total GDP, 48 percent of total employment is in agriculture, 52 percent of the population is rural (of which 53 percent are below the poverty line), and 78 percent of all land area is dedicated to agriculture (WDI 2016).

The ATA was designed to complement the CAADP in Nigeria to better suit the country's development pace. The agenda aimed to increase productivity and value addition in agriculture to reduce food prices and reliance on food imports. To reduce Nigeria's reliance on oil, the ATA promoted key agricultural commodity value chains with an emphasis on engaging women and youth in the agricultural transformation process. The ATA was a platform to engage key stakeholders in Nigerian agriculture and to focus on how to make Nigeria's agriculture more productive, efficient, and effective (Africa Lead–IFPRI 2012; Babu et al. 2014).

In 2016, the Buhari administration introduced the Agriculture Promotion Policy (APP) to address gaps in the ATA. The APP focuses on food security, import substitution, job creation, and economic diversification. This new policy is founded on several guiding principles carried over from the ATA, reflecting a strong desire for policy continuity and stability.

Transforming the Nigerian agricultural sector also requires substantial increases in public investment to achieve significant agricultural growth (Diao et al. 2012). These increases in funding start from a very low base. Mogues et al. (2008) reported that federal expenditures on agriculture as a share of total expenditures has been less than 3 percent since the 1980s. Moreover, that share declined in the decades of the 1990s and the 2000s. Benin and Yu (2013) show that Nigeria's agricultural expenditure shares are low even compared to its West African neighbor countries.

More recently, Hatzenbuehler and Mavrotas (2017a; b), drawing on the tradition of fiscal response models (see Heller 1975; Gang and Kahn 1990; Khan and Hoshino 1992; Mavrotas 2002, 2005; among others) developed an economic model that outlines the linkages between government institutions at the federal and state levels and farm households. Using empirical fiscal and household data from Nigeria, the authors applied the model in a simulation of the effects of oil price changes on the allocations of funding for agriculture and, ultimately, the well-being of farm households in two states, Kaduna and Cross River. The simulation results show that changes in the global oil price can have pronounced effects on state government and Ministry of Agriculture budgets and provide insights into how feasible institutional mechanisms can be designed to ensure that public funding for agricultural programs is sustained over time.

The way that public expenditures are allocated by governments can importantly shape the performance of the sector (Mogues, Fan, and Benin 2015). Along with other public policies, public expenditures in Nigeria can create both incentives and disincentives for farmers and agribusiness to invest in the sector (MAFAP 2013). The World Development Report on agriculture (World Bank 2007a) asserted that effective resource allocation to the agricultural sector, such as for the delivery of services like extension, credit, research and development, and plant and livestock disease control, are critical to the strong performance of the sector. In Nigeria, the public sector still plays a major role in providing and financing such services—although private service providers are also central for certain functions, such as input supply, output processing, and marketing.

As in other countries, the public-sector agencies involved in agriculture in Nigeria are not monolithic, but consists horizontally of different government agencies and parastatals and vertically of different tiers of government, i.e., federal, state, and local. In many developing countries, especially in Africa, sub-national governments play a relatively limited role in overall public spending of the country. However, in large federal states like Nigeria, this is far from the case. Specifically, the 36 states of the Federal Republic of Nigeria, the Federal Capital Territory (Abuja), and the 774 local governments in Nigeria all perform a role in public service delivery and public expenditure outcomes. State and local governments account for about 46 percent of public spending across all sectors in Nigeria (World Bank 2007b). Detailed data and research on the relative shares of federal, state, and local government spending in agriculture in Nigeria has not been assembled to date. Therefore, the equivalent figure in agriculture, i.e. sub-national agricultural spending as a share of public agricultural spending across all tiers, is not known. However, it is likely to be larger than the share of total sub-national expenditure in aggregate Nigerian expenditure. This is because there is a relatively stronger role for state and local governments in agriculture compared to several other sectors, such as energy, defense, or certain types of infrastructure, which are primarily financed at federal level.

Despite the potentially high weight of sub-national spending in total spending on agriculture in Nigeria, no systematic examination has been done, to the best of our knowledge, of trends and patterns of sub-national expenditures in agriculture and the impact of these expenditures on economic performance. Olomola et al. (2014) and Mogues et al. (2012) examined quantitative trends and patterns in public expenditures in agriculture at federal level and for three selected states. However, since these results were produced at sub-national level only as case-studies, it is difficult to extrapolate from these findings to all of

Nigeria.[1] In this paper we address this knowledge gap by conducting descriptive analysis of sub-national state level public expenditures as well as agricultural productivity and economic welfare indicators to which those public expenditures are expected to contribute.

This paper pays particular attention to seven of Nigeria's 36 states, following a specific request from USAID/Nigeria (who funded this research) to focus this study on these states. These seven states were selected under USAID's Global Food Security Strategy (GFSS) as the focus states for their investments – Niger, Delta, Ebonyi, Benue, Kaduna, Kebbi, and Cross River. The GFSS Nigeria Country Plan (USAID 2018) states that the states were selected based on:

- Their production potential for prioritized value chains – aquaculture, cowpea, maize, rice, and soybean;
- Demonstrated commitment to promote and diversify agriculture production;
- Accumulated knowledge and capacities of key stakeholders developed through past association with USAID;
- Opportunity to leverage private sector partnerships;
- High rates of undernutrition;
- Social needs; and
- Security considerations.

We proceed in this paper as follows. Section 2 gives background information on the seven selected states. A brief description of the data used in our analysis is presented in section 3. Section 4 offers descriptive results of public expenditure, agriculture, and welfare indicators at state level, comparing outcomes in all states of Nigeria to those of the seven GFSS states. Section 5 concludes with a synthesis of our findings and some policy recommendations.

2. BACKGROUND ON THE SEVEN GLOBAL FOOD SECURITY STRATEGY STATES IN NIGERIA

As noted, this paper pays particular attention to the seven GFSS states from among Nigeria's 36 states. Here we provide additional detail on the seven states.

2.1 Niger

Niger state, which is found in the Middle Belt of Nigeria, is one of the seven states in the North Central zone. It is the second largest state in Nigeria after Borno state, with a land area of 68,900 km^2, which represents 7.5 percent of Nigeria's total land area (NBS 2016). The state is endowed with several water bodies, the most notable being the Niger and Kaduna rivers. Eighty percent of land in Niger state is considered arable (SPARC 2015).

Agriculture is the backbone of Niger state's economy, with 85 percent of the population engaged in farming activities as their primary occupation (HNLSS 2009). Food and cash crops include rice, sorghum, maize, millet, groundnuts, cowpeas, soybeans, sesame (benniseed), cotton, yam, cassava, sweet potato, sugar cane, melon, vegetables of all kinds, shea nut, locust bean, and oil-palm. In addition, artisanal fishing is also commonly practiced. Fish production is estimated at 55,000 metric tons per annum (SPARC 2015). However, despite the favorable agricultural environment, agricultural production in the state is well below its capacity and is characterized by gross underutilization of available resources. Other sources of economic

[1] In addition, two recent studies conducted qualitative analyses on the political economy drivers of public expenditure decision-making in support of agriculture based on key informant interviews in selected LGAs and states (Mogues and Olofinbiyi 2016; Olofinbiyi and Mogues 2016).

wealth are derived from the generation of hydroelectric power and the exploitation of solid minerals. The water resources additionally offer increased prospects and opportunities for irrigated agriculture.

2.2 Delta

Delta state is found in the coastal belt along the Atlantic Ocean. The state, which is one of nine states in the Niger Delta region, covers 17,000 km² (NBS 2016). The ecology in the south of the state is dominated by mangrove swamps and marshy terrain, while the northern part is a part of the tropical rain forest belt. The state is endowed with a good climate and soils that supports year-round agricultural production. Due to its extensive coastal area, artisanal fishing is also a major occupation, with production of almost 36,000 metric tons in 2011, making it the fifth highest fish producing state (NBS 2016). Its topography, barely above sea level, and high annual rainfall, contribute to regular incidences of flooding.

Agricultural production in the state is practiced within small farm holdings on which both food and industrial crops are produced. The food crops include yam, plantain, maize, and fruits and vegetables (mangoes, pawpaw, pineapples, banana, pepper, and tomatoes), while the industrial crops are rubber and oil palm. Delta state is a leading producer of rubber in Nigeria, with about 33 percent of national production on 21,000 hectares, and is the third highest producer of oil palm (NBS 2007). The state also possesses significant forest reserves covering 78,500 hectares. However, only 3 percent is under forest plantation (NBS 2016).

Delta is also the largest crude oil producing state in Nigeria and, hence, an integral stakeholder in the Nigerian oil and gas industry, from which is generated over 90 percent of the nation's foreign exchange earnings (Ugbomeh and Atubi 2010). Paradoxically, despite increasing revenue from crude oil exploitation, the communities from which this crude oil is extracted continue to live in conditions of social deprivation and poverty. Moreover, the environmental consequences of oil pollution on the livelihoods and health of residents is significant. Oil spills have degraded large areas of arable land (Inoni et al. 2006).

2.3 Ebonyi

Ebonyi state is found in the Southeast zone of Nigeria and covers 6,400 km^2 (NBS 2016). The state is made up of a mixture of savanna and semitropical forest vegetation types. Much of the soil is a clay-loam with poor drainage and a gravely subsoil, making it ideal for rice production (Ekpe et al. 2005). The working population of rural Ebonyi state is predominately made up of rice farmers and rice traders. The rice milling industry has several medium-scale and industrial-scale mills with an estimated production of about 136,000 metric tons per year. However, between 2009 and 2013 the state experienced a decline in rice paddy production (Johnson and Masias 2017). Other crops widely cultivated in the state include yam, groundnut, cocoyam, cassava, maize, plantain, banana, cassava, melon, sugar cane, beans, fruits and vegetables. Unlike other riverine states, fishing is not pervasive in Ebonyi and is mostly carried out in Afikpo local government area (LGA).

Agriculture is the backbone of the Ebonyi's economy. Seventy-eight percent of employment is in agriculture (HNLSS 2009). Irrigated farming is widely practiced for tree crops such as oranges, mangoes, apples, cashew; and oil palm. Non-farming employment activities range from petty traders to civil servants.

2.4 Benue

Benue state is in the North-Central (or Middle Belt) zone, with a land area of 30,800 km^2 (NBS 2016). Landlocked, the state borders Nasarawa, Taraba, Enugu, and Kogi states and, on the southeast, the Republic of Cameroun. River Benue, from which the state draws it name, is the second largest river in the country. The river and other water bodies provides opportunity for fishing and irrigated farming. The vegetation in the southern part of the state is tropical forest with habitat for tropical animal species. The

state, thus, potentially could develop forest and wildlife reserves. The south-eastern part of the state is mountainous with a cool climate, comparable to that found in Plateau state.

Agriculture forms the backbone of the Benue state economy, engaging more than 70 percent of the working population (NBS 2009). The state is often referred to as the food basket of the nation due to its wide variety of agricultural produce, which includes yam, rice, bean, cassava, soybean, sorghum, millet and tomato. However, its comparative advantage is in the production of soybean. The state accounts for over 70 percent of Nigeria's soybean production (NBS 2007). Livestock in the state include poultry, goat, sheep, pig, and cattle. Most farmers are smallholders who produce on a subsistence level.

2.5 Kaduna

Kaduna state is in the North-West zone, located in the central part of northern Nigeria. It is the third largest state in the country with an area of 42,500 km^2, or 4.6 percent of the total land area of Nigeria (NBS 2016). The southern part of the state is in the Guinea Savannah vegetation zone, with the Sudan Savannah in the north. The Kaduna state Ministry of Agriculture reports (2015) that agriculture is the largest contributor to the state GDP (30 percent) and employs 80 percent of the total population. The state is the second largest producer of cotton in the country after Borno state (NBS 2007). Other major crops produced include yam, cotton, groundnut, tobacco, maize, beans, guinea corn (sorghum), pearl millet, ginger, rice, and cassava. During the dry season, irrigated farming is common along major rivers and dams. Almost 4,000 hectares of land is under irrigation (NBS 2007), primarily for vegetable and, to a more limited extent, wheat and maize production. The second major occupation practiced in the state is animal husbandry, mainly of cattle, sheep, goats, pigs, and poultry.

2.6 Kebbi

Kebbi state, found in the North-West zone of Nigeria, shares borders with the Republics of Benin and Niger and with Sokoto, Zamfara, and Niger states. Its area is 37,000 km^2 (NBS 2016). Kebbi State has three agroecological zones – the Northern Guinea Savannah, the Sudan Savannah, and the Sahel Savannah. The flood plain along the valleys of the main rivers, the Niger and the Sokoto, provide opportunities for irrigated farming (FEWSNET 2014), which the rivers serve for fishing and transportation. In the upland areas, rain-fed agriculture by smallholder farmers dominates (NBS 2007). A major activity in the state is the rearing of animals, since over 75 percent of the population resides in rural areas (NBS 2016). A significant number of urban dwellers also engage in farming to supplement their income. Non-farm activities include trading, fishing, handicraft production, food crop processing, and building and construction, among other activities.

2.7 Cross River

The state lies within the South-South zone and covers an area of 22,000 km^2 (NBS 2016). It has diverse vegetation types, from the largest tropical rain forest in Nigeria to mangrove swamps and savannahs. The central part of the state is in the rainforest belt, while the northern part is in the Guinea Savannah vegetation zone. Small-scale subsistence farmers dominate the agriculture sector. Farmers in the south and central parts of the state are predominantly food crop farmers, producing maize, yam, cassava, cowpea, banana, plantain, rice, tomato, vegetables, and pineapple. However, the central zone also is noted for the production of cocoa and palm oil in commercial quantities. The state is the second largest producer of oil palm in Nigeria with 116,000 hectares and the second largest producer of cocoa, producing 70,000 metric tons a year (NBS 2007). Cross River also is the third largest producer of rubber in the country. Farmers in the north of the state produce cassava, yam, maize, rice, and groundnut. Generally, cassava, yam, and maize are the major food crops grown in the state. Most areas have rivers, which encourages fishing activities. Other economic opportunities include agricultural processing, packaging, and marketing of agricultural products, mainly by farmers.

3. DATA AND METHODOLOGY

Econometric analyses of public expenditure impacts in and for agriculture have been conducted in many countries. In Africa, these include Ethiopia (Mogues 2011), Ghana (Benin et al. 2012), and Uganda (Fan and Zhang 2008). In Asia, similar studies have been done in China (Fan, Zhang, and Zhang 2004), India (Fan, Gulati, and Thorat 2008) and Thailand (Fan, Yu, and Jitsuchon 2008).

For the study here, data on state-level public spending are drawn upon both in aggregate and for broad functional categories.[2] Administrative data on state-level characteristics for agriculture and welfare (including nutrition) also are employed. In addition to analysis using data on all states of Nigeria, in-depth analysis is performed at the state-level for the seven GFSS states. Given the limited time-series at the state level on the variables of primary interest—public expenditure and agricultural and welfare outcomes—and, more importantly, given the fact that the public expenditure data is from more a recent time period, 2007 to 2015, than is the agricultural data, which is from the period 1995 to 2006, our analysis, while quantitative, is primarily of a descriptive nature.

The data used for this research is from two main sources, the National Bureau of Statistics (NBS) and the Central Bank of Nigeria (CBN). From NBS, we used data from the 2009 Household National Living Standards Survey (HNLSS), extracting labor and production data from that survey. The survey series, which started in the early 1990s, uses an expenditure approach to measure, monitor, and evaluate poverty. The HNLSS 2009, which is the latest of the survey series, has two components: Part A is the Core Welfare Indicator Questionnaire Survey 2006, while part B is the Nigeria Living Standard Survey 2004. HNLSS combines both CWIQ and NLSS. This survey was carried out by the NBS in November 2008 in all 774 LGAs of Nigeria. 77,390 households were interviewed.

In addition, we looked at various statistical bulletins and social statistics reports for the periods available. This data is generated by various ministries and government organizations through administrative records, surveys, and censuses and is compiled by NBS. These publications offered data on socio-economic statistics, which include health, education, labor, and agriculture, among others.

From the Central Bank of Nigeria, state-level fiscal data were obtained from their annual statistical bulletins and reports. We also examined records of annual surveys conducted by the Bank, which are available only for the period 2006 to 2015.

4. DESCRIPTIVE RESULTS: PUBLIC EXPENDITURES AND AGRICULTURAL AND WELFARE INDICATORS AT STATE-LEVEL

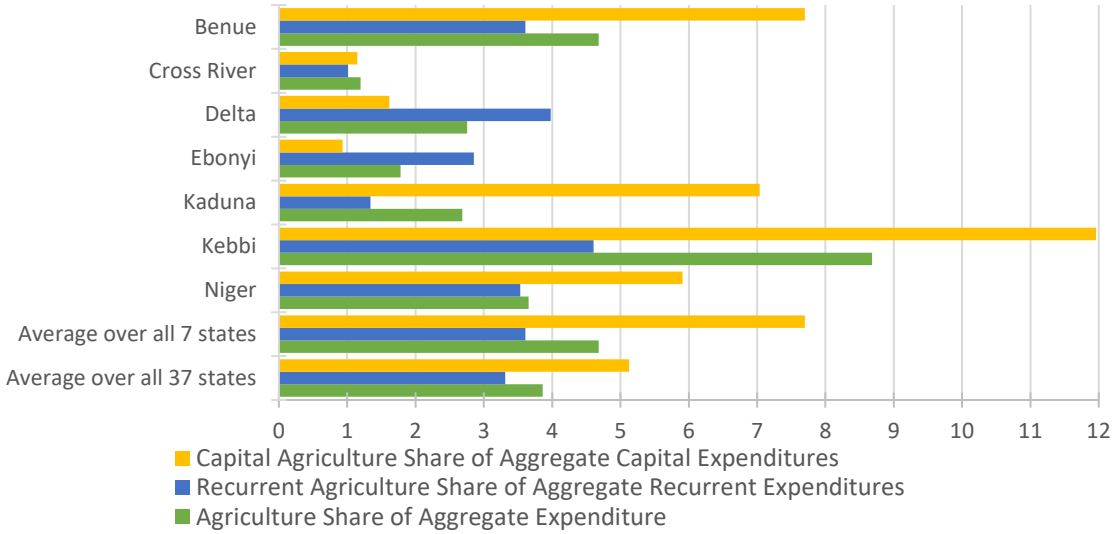
4.1 Public expenditures

Figure 1 presents the extent to which agriculture is prioritized in public expenditures for all Nigerian states, as well as in the seven GFSS states. The data are aggregated over the full panel of nine years from 2007 to 2015 for which this information is available. The findings in Figure 1 across all 37 states are not dissimilar to data obtained in recent state case studies (Mogues et al. 2012; Olomola et al. 2014). The two publications analyzed public expenditures at federal, state, and local levels. However, given the absence of consistent data for sub-national jurisdictions at the time, it was only possible to carry out the case studies in three

[2] Experience in conducting data collection for past descriptive analysis on public expenditure patterns and trends at the sub-national level in Nigeria (Olomola et al. 2014; Mogues et al. 2012) has revealed that going beyond the broad functional categories to obtain a highly detailed breakdown of public expenditures would require field visits to each of the states and LGAs. The focus on broad categories, thus, is necessitated by the prohibitive time and resource requirements required for obtaining fine-grained spending data for each state and LGA.

states in each case. Field trips were required to these states to obtain the public finance accounts that would yield the needed data.

Figure 1. Average share of agricultural expenditure to aggregate expenditure at state-level – capital, recurrent, and total, 2007 to 2015, for the GFSS states, percent



Source: CBN Annual survey

Mogues et al. (2012) examined Bauchi, Cross River, and Kaduna states—the latter two being among the GFSS states considered in this paper. The authors found that the share of public spending at state level that was going to agriculture was higher than this same share at the federal level, and to a significant degree: In each of the three states, it was on average nearly twice as large as the federal share. Specifically, for the period 2001 through 2005, the share of public expenditures going to the agricultural sector in Bauchi ranged from 3.2 percent to 5.8 percent, for Cross River it was lower, ranging from 1.3 percent to 4.1 percent, and for Kaduna it ranged from 1.5 percent to a high of 7.5 percent. Comparing these past results with our more recent findings shown in Figure 1 for the two states that this and the past study have in common – Cross River and Kaduna – we see that public expenditures in the two states appear to have shrunk dramatically over time. The average share in the period from 2007 to 2015 was a mere 1.19 percent in Cross River. Kaduna commits a larger, but still modest share of its expenditure envelope to the agricultural sector, at 2.68 percent on average across the years. While Cross River is at the lower end across all seven GFSS states, Kebbi is at a high end, spending 8.68 percent of its total budget on agriculture. There is generally wide variation across the seven states. However, Figure 1 also shows that, when taken together, these states are typical and mirror patterns across all Nigerian states. Specifically, while the average share for all 37 states is 3.86 percent, this is comparable to the 3.63 percent share for the seven GFSS states.

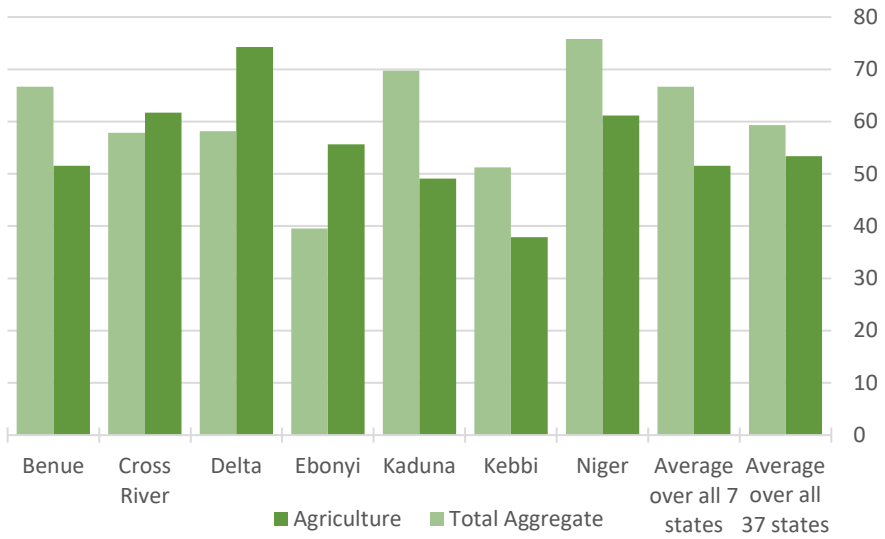
It is useful to also consider the importance given to the sector out of the two major categories in the economic classification of public expenditures – recurrent expenditures (salaries, operating costs, etc.) and capital expenditures (purchase of machinery, construction of buildings, etc.). Figure 1 suggests that agriculture is more capital intensive than state public expenditures as a whole. Of total sub-national recurrent expenditures, 3.31 percent are allocated to agriculture. However, out of all sub-national capital spending, 5.13 percent is dedicated to the sector. In contrast to several other sectors, a priori it is not clear whether agriculture would be more capital intensive than total government spending. For example, even without recourse to data, it can be surmised that transport infrastructure is more capital intensive than the capital intensity of overall government spending, given that road construction and maintenance demands substantial outlays on capital goods. In contrast, education spending can be expected to be relatively less capital intensive than other sectors, given the high share of costs in the sector for teacher salaries.

However, in agriculture, in principle there are important expenditure items of both a recurrent nature, such as agricultural extension workers' compensation, and of a capital nature, such as irrigation. What we find in the results is that at the sub-national level at least, the capital intensity exceeds that of all sectors taken together. This is of note even though, for example, agricultural extension, which is primarily a recurrent expenditure, is supposed to be in the purview of the states, as opposed to local governments or the federal government. It is possible that the current relatively higher capital intensity of agriculture was not as pronounced in the past when the Agricultural Development Programmes (ADPs)—the vehicle for providing extension services through the states—were still well funded. ADPs, after showing lackluster performance and due to a broader de-emphasis of agriculture in international development assistance, have seen a significant decline in funding over the past two decades.

An examination of agriculture shares in recurrent and capital spending for the seven GFSS states taken together shows a very similar pattern to that seen across all states – in the GFSS states, the agriculture share in recurrent and capital spending is 2.99 percent and 5.19 percent, respectively. Again, this average includes wide variation across the states. Capital intensity is particularly high in Kaduna, with recurrent expenditure in agriculture constituting 1.34 percent of all recurrent expenditures, but 7.05 percent for capital expenditures. In contrast, Delta state has a pronouncedly different pattern with recurrent expenditures in agriculture being 3.98 percent of all recurrent expenditures versus capital expenditures in agriculture making up only 1.62 percent of all capital expenditures of the state government.

This can also be seen in Figure 2. Of agricultural expenditures, recurrent spending makes up 53.4 percent across all 37 states. However, the share of recurrent spending to total (i.e. recurrent and capital) spending for all sectors aggregated together is 59.3 percent. In addition to the relative capital intensity of agriculture that emerges, Figure 2 also provides insights on the weight that the two economic categories take up in agriculture, as well as across all sectors. Generally, at the sub-national level, across all seven GFSS states, and in each GFSS state, it is above or nearly the majority of public spending. Only in Kebbi is it clearly less, at 37.9 percent.

Figure 2. Average share of total recurrent expenditure to total aggregate expenditure at state-level and agricultural recurrent expenditure to agricultural aggregate expenditure, 2007 to 2015, for the GFSS states, percent



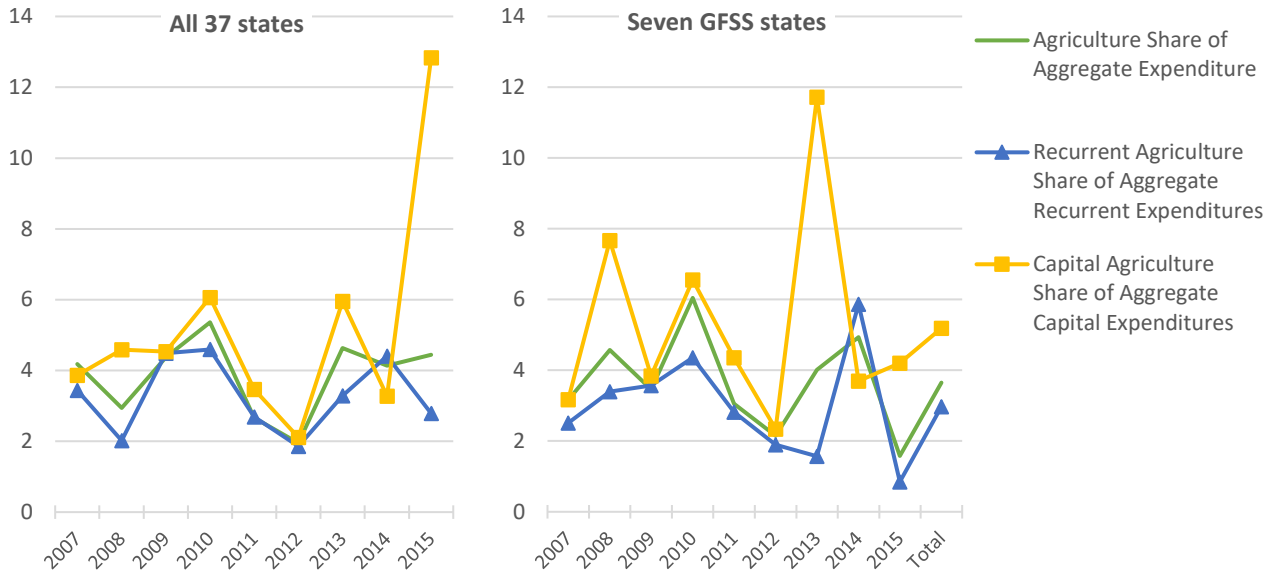
Source: CBN Annual survey

Some analysts have suggested that capital expenditures, which are sometimes termed as "development" expenditures, are de-emphasized in fiscal planning, as recurrent expenditures can be

bloated by compensation to public sector workers who do not add importantly to the productivity of public programs. While this perspective is primarily based on anecdotal evidence, assessments have been made of the returns to capital versus recurrent expenditures. For example, based on econometric analysis, Benin et al. (2012) drew the conclusion that in Ghana the contribution to the performance of the agricultural sector of capital spending in agriculture was greater than that of recurrent spending. The policy recommendation they drew from this analysis is that the Ghanaian government should consider rebalancing the two components. But other studies have found more mixed results. Drawing on cross-country panel data from 35 developing countries for the period 1974 to 1984, Diakosavvas (1990) determined the separate impact of agricultural expenditures disaggregated into current and capital categories. This study found results that varied by developing region: The elasticity of agricultural output with regard to recurrent spending was higher than that with regard to capital spending in the case of Latin American and African countries. However, it was higher with regard to capital (as opposed to recurrent) spending in Asia and the Near East. This literature appropriately treats the question of whether a government (or sub-national governments) should rebalance public expenditures in favor of either more recurrent or more capital spending as an issue that needs to be investigated empirically.

Figure 2 considered the prioritization to agriculture when averaged over time. In contrast, Figure 3 enables us to examine whether there were specific trends in this prioritization over time across all of Nigeria's states and for the seven GFSS states.

Figure 3. Average annual share of total agriculture expenditure to total aggregate expenditure, share of recurrent expenditure to aggregate recurrent expenditure, and share of capital expenditure to aggregate capital expenditure, 2007 to 2015, for all states (left) and the GFSS states (right), percent



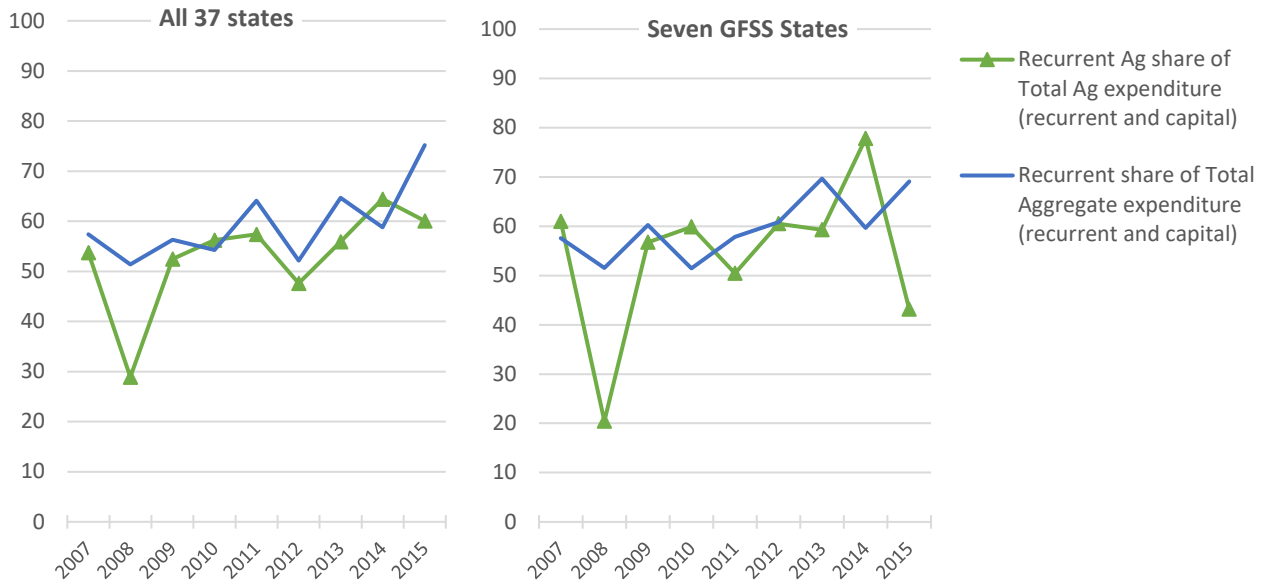
Source: CBN Annual survey

In looking at averages for all states in Nigeria in the left chart in Figure 3, we find that there is a large degree of temporal fluctuation—for example, the percent of state budgets nationwide spent on agriculture reaches a low in 2012 at about 2 percent, and a high two years before that of 5.4 percent. The share, thus, more than halved over this short time period. Agriculture's share in the two economic components, capital and recurrent spending, trace the overall share somewhat closely in its evolution over time. An exception is the last year for which the data are available, 2015, when agriculture's share in capital expenditures dramatically spiked to 12.8 percent. It is conceivable that in one or more states, an extremely large and capital intensive agricultural project was carried out. Closer inspection of the corresponding shares of each of the 37 states would be required to understand the reason for this spike.

Looking only at averages for the seven GFSS states in the right chart in Figure 3, the patterns generally mirror the trends seen across all Nigerian states. Here again there is a substantive degree of fluctuation around a minimum of 1.5 percent in 2015 to a maximum of 6.1 percent in 2010. As was the case across all states, here too any long-run increase or decline in prioritization of agriculture cannot be traced, even though we are examining a nine-year period during which longer-run trends would be expected to develop.

In Figure 4, we temporally disaggregate the intensity of recurrent expenditures in the agriculture sector and in the overall budget both for all states (left chart) and the GFSS states (right chart). Interestingly, across all states (and with much more noise, in the case of the 7 states) there does appear to be a long-term slight increase in the intensity of recurrent expenditures in agriculture. The share of recurrent expenditure in overall agricultural expenditure inches upward over time from around 40 percent in 2007 and 2008 to 60 percent in 2014 and 2015. Figure 4 shows, however, that this pattern is not confined to the agricultural sector. The same long-term trend is observed with regard to the share of recurrent to total expenditures for the aggregate budget. Here in fact, this share rises from 50 percent to 70 percent over the period 2007 to 2015.

Figure 4. Share of recurrent expenditure in agriculture to total agriculture expenditure, and share of recurrent aggregate expenditure to total aggregate expenditure, 2007 to 2015, for all states (left) and the GFSS states (right), percent



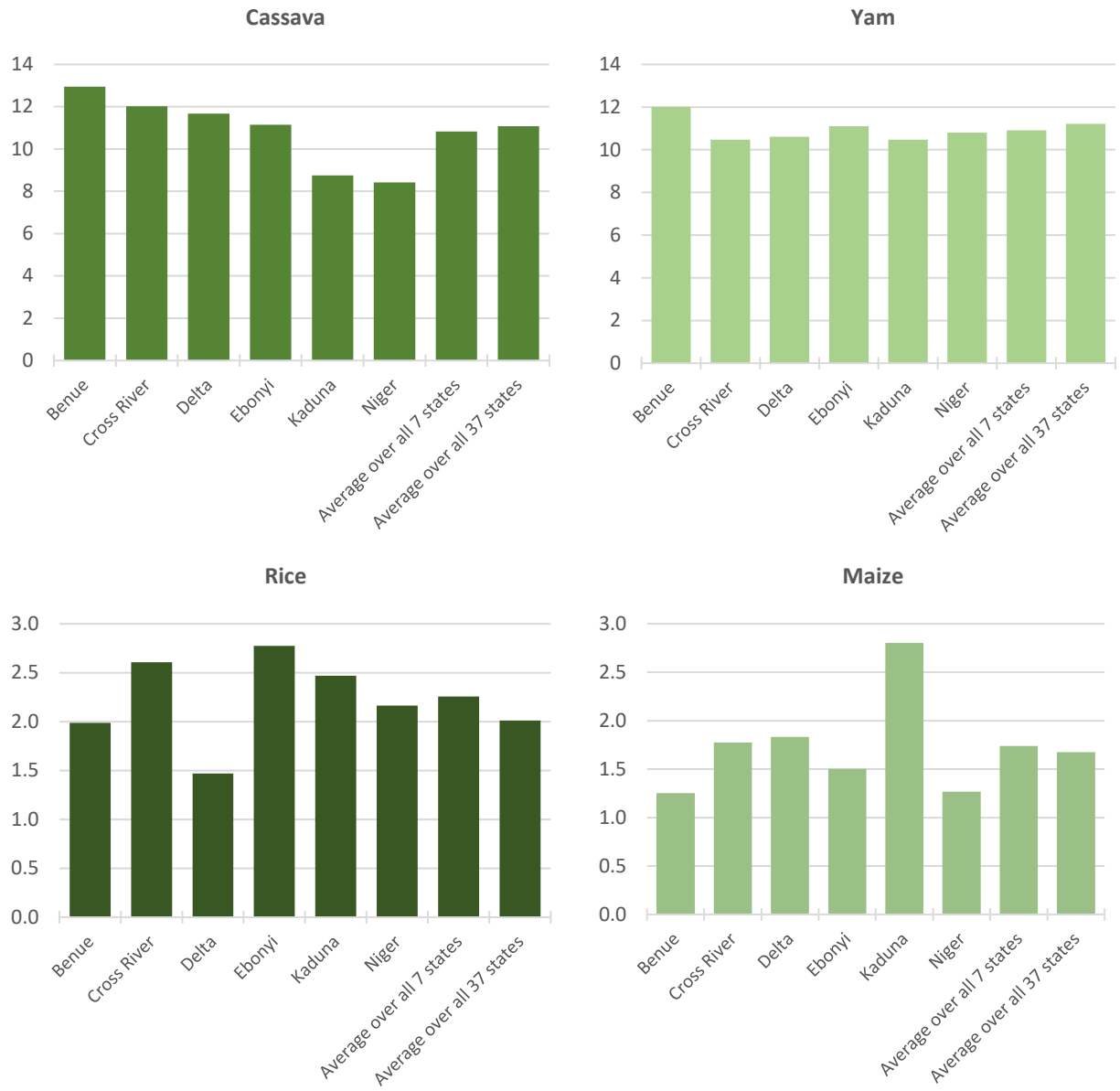
Source: CBN Annual survey

4.2 Agricultural indicators

4.2.1 Yields

Figure 5 shows the most commonly used metric of agricultural performance – agricultural productivity, measured as production per land area, or yield. We present this for four of Nigeria's major crops, both across the country, and for the seven GFSS states. Average yields for the major tuber crop, yam, and the root crop, cassava, are about 11 mt/ha, while the cereals, maize and rice, yield about 1.7 and 2.0 mt/ha, respectively. The seven GFSS states are on average about equal in their productivity to Nigeria as a whole for these crops. A slight exception is rice, for which the GFSS states somewhat outperform the rest of the country.

Figure 5. Yields of cassava, yam, rice, and maize, average of 1995 to 2006, for the GFSS states, mt/ha

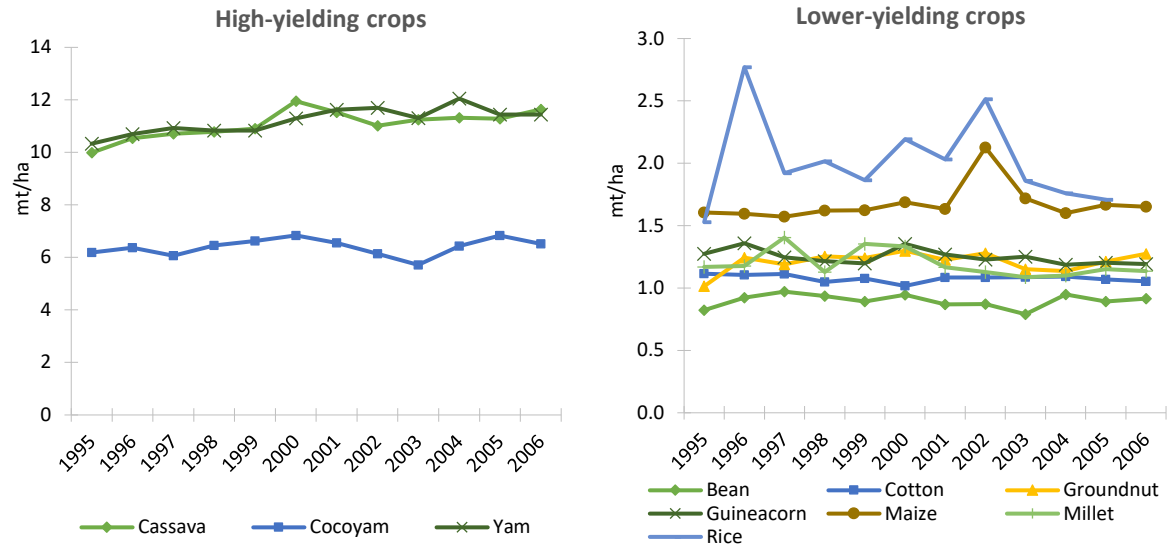


Source: NBS
Note: All production and area data were missing for Kebbi state, so it was excluded here.

There is significant variability among the individual GFSS states for some crops. The nature of variation across states and crops shows that individual states outperform on some but not all crops. For example, Kaduna produces the lowest yields of cassava among the GFSS states, with an average yield about three-quarters that of the highest productivity GFSS state, Benue. Delta state has by far the lowest average rice yield among the GFSS states at only about half the average yield of Ebonyi state. Finally, the average maize yield in Niger state is less than half that of Kaduna. However, there is relative uniformity in yam productivity across the GFSS states.

This analysis relied on long-term averages over the 12 years from 1995 to 2006. Does this average hide important productivity increases that took place over these years? Figure 6 disaggregates the average yield data by year. The commodities are separated into a high-yield crop group and a low-yield crop group, as including them within the same graph will conceal time trends.

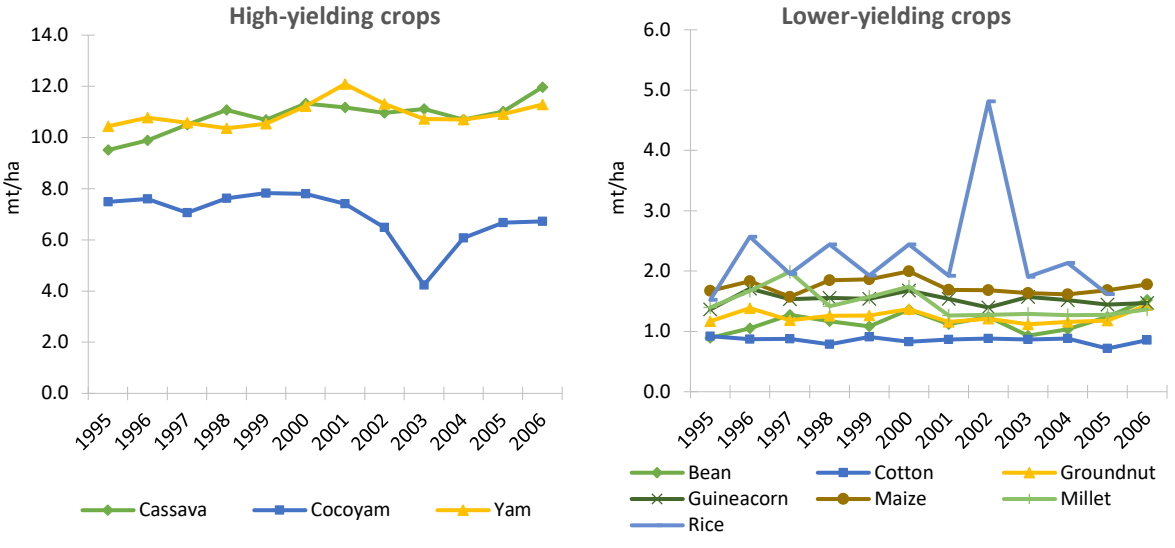
Figure 6. Average annual yields of high-yielding (left) and lower-yielding (right) crops for all states of Nigeria, 1995 to 2006, mt/ha



Source: NBS

We do not see important productivity increases between years in this period – the answer to the question in the previous paragraph is generally not in the affirmative. Over the period from the mid-1990s to the mid-2000s, there is no discernible upward trend in agricultural productivity. There are some shocks for individual crops and years, such as a spike in 2002 for maize and in 1996 and 2002 for rice, and a major drop in cocoyam yield in 2003—these may be caused by weather shocks. However, otherwise, the broad long-term trend reveals stagnant yields in Nigeria across all commodities examined. Only cassava and yam show some slight yield increases (Figure 6).

Figure 7. Average annual yields of high-yielding (left) and lower-yielding (right) crops for the seven GFSS states, 1995 to 2006, mt/ha



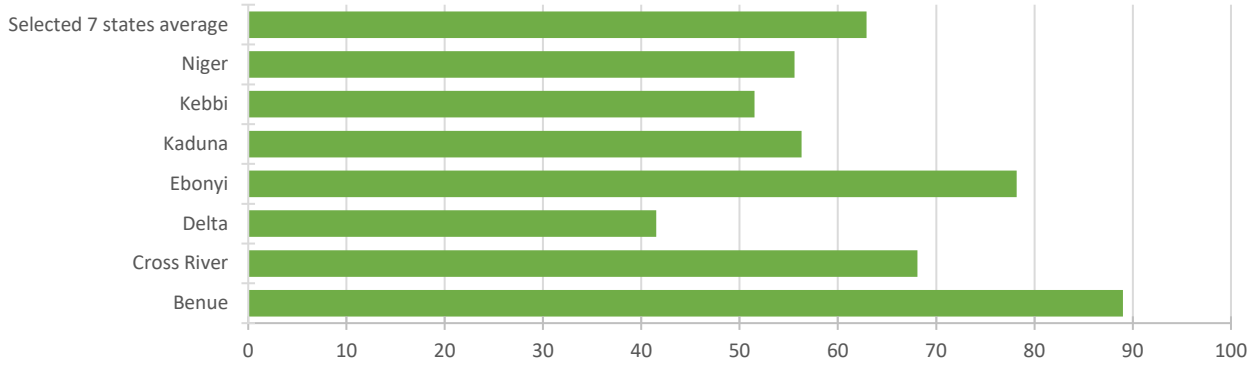
Source: NBS

Figure 7 presents similar graphs of average yields for the seven GFSS states. The results are consistent with the Nigeria-wide picture: yields are largely flat over the period. Cassava and yam constitute a slight exception, as these two high-yielding crops saw a small increase in productivity over this period.

4.2.2 Agricultural labor force

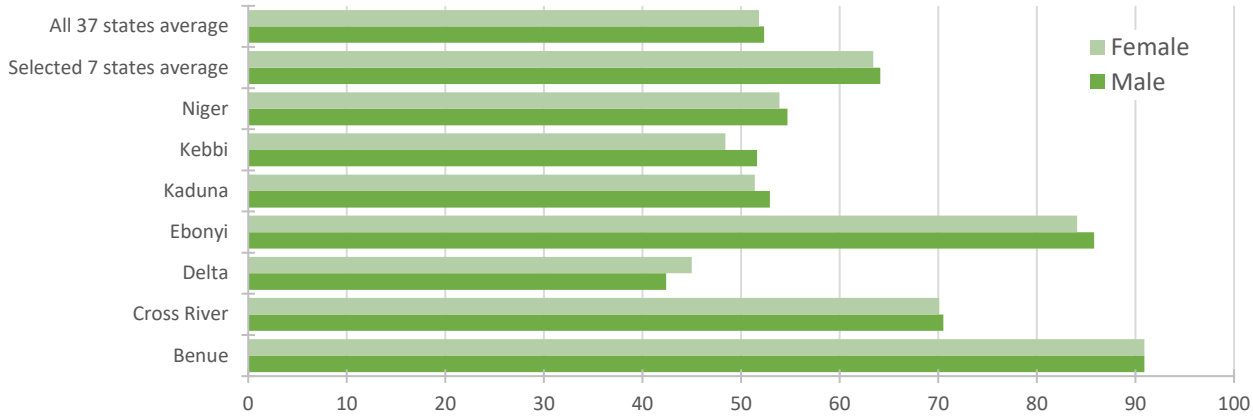
The role of agriculture in terms of employment is substantial even in a country like Nigeria, in which agriculture had suffered the resource curse following the discovery of oil. Figure 8 and Figure 9 show that the average share of the working population engaged in agriculture is around 50 percent. The slight difference across the two sets of statistics stems from the different demographic ranges used to compute the statistics. Figure 8 considers only the official working age population, i.e. those ranging from 15 to 64 years of age. Figure 9, on the other hand, considers all individuals aged 5 years and above. As it is not uncommon for older children to work on the farm in African agricultural contexts, the percentage reflected in Figure 9 is slightly higher than that for Figure 8. We also see a gender breakdown in Figure 9, which reveals only slight differences between the share of men and the share of women working in agriculture.[3]

Figure 8. Share of total employed adults aged 15 to 64 years working in agriculture, 2009, for the GFSS states, percent



Source: NBS HNLSS 2009

Figure 9. Share of total females and males aged 5 years and above working in agriculture, 2009, for the GFSS states, percent



Source: NBS HNLSS 2009

The results overall show that workers in the seven GFSS states have a much greater involvement in agriculture than do workers across Nigeria as a whole. 49 percent of the economically active working age population in Nigeria is primarily involved in agriculture, as opposed to 63 percent of the equivalent population in the GFSS states. The data disaggregating the population 5 years and above by gender similarly shows a large difference between the agricultural employment share in the GFSS states (63 percent of women, 64 percent of men) compared to all Nigerian states (52 percent among both women and men).

[3] See also Adesugba and Mavrotas (2016a; 2016b) for a detailed discussion on employment issues in the Nigerian agricultural sector, with a focus on youth employment.

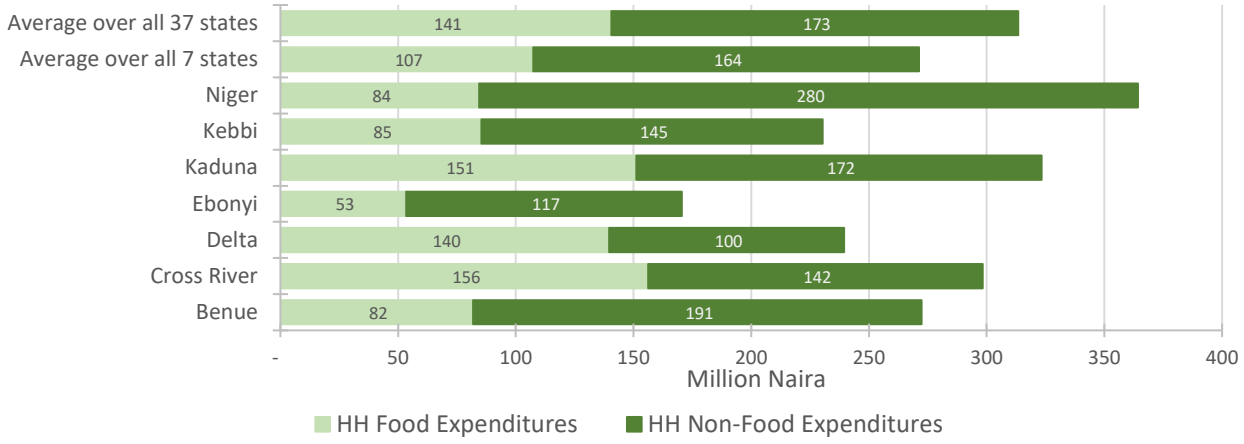
Within the GFSS state we see significant variation – Delta state has only slightly more than one-third of its population involved in agriculture, while in Benue state nearly nine out of ten are active in agriculture.

4.3 Welfare indicators

Household food and non-food expenditures are closely associated with wealth. In theory, high food expenditure would imply that most resources available to the household are devoted to food purchases and, hence, few resources are available for other consumption purposes or the production of income for the household. The Nigeria Comprehensive Food Security and Vulnerability Analysis of 2013 revealed that in the poorest quintile of the Nigerian population, 82 percent allocated at least 75 percent of total household resources to food compared with just 13 percent in the wealthiest quintile (Kuku et al. 2013). This provides evidence of increased vulnerability to food insecurity among poorer households.

Figure 10 shows the distribution of household food and non-food expenditure for each of the seven GFSS states of focus and the average over all states for the year 2009. However, valuation of the consumption of own-produced food is not included in the computation of total food expenditures as reported in the NBS's Annual Abstract of Statistics (NBS 2016). In consequence, these figures should be interpreted with caution, granted that states with greater agricultural production – particularly those with significant subsistence production – will likely have underrepresented valuations of food expenditure in these data. That said, households in Delta and Cross River states spend about 45 percent of total expenditure on food items, which is higher than the average of the seven GFSS states. Conversely, Niger state household spent only 20 percent of total expenditures on food.

Figure 10. Household food and non-food expenditures for the GFSS states, 2009



Source: NBS 2016 Annual Abstract of Statistics.

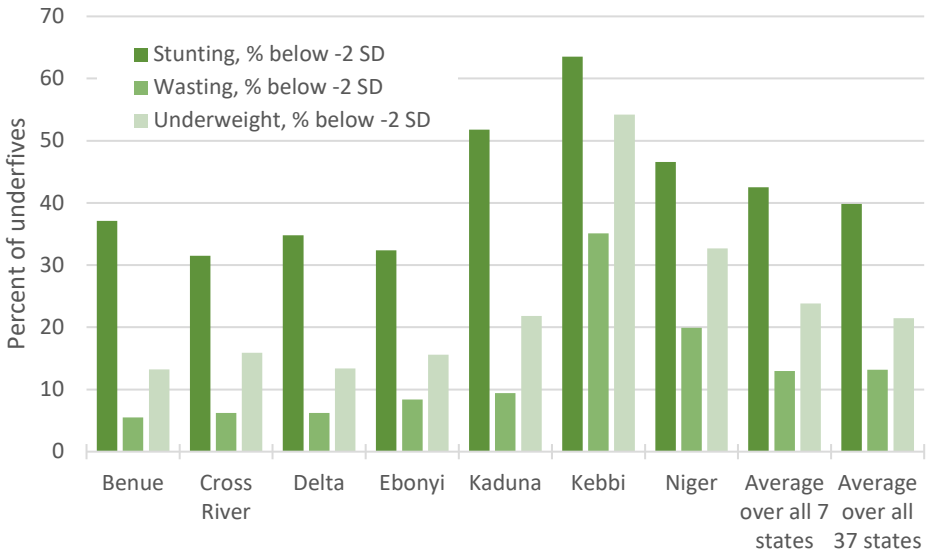
Food makes up 30 percent of expenditures for households in Ebonyi and Benue states on average. This is lower than the average food share both for all states and for the seven GFSS states, which are 40 percent and 45 percent, respectively. Iorlamen et al. (2014) found that the mean household expenditure on food for urban households in Benue State was only ₦21,748 (USD 140) per month and that the income of the household head and the size of the household were key determinants of household food demand.

Benue state offers a wider variety of agricultural produce in agricultural markets than do other states. As such, farming households are likely to consume from their own production, thus giving them access to a greater diversity of foods in their diet with related higher nutritional benefits. Dietary diversity has been found to be positively associated with child nutrition outcomes (Arimond et al. 2010; Ruel, Harris, and Cunningham 2012). Likewise, crop diversity could also translate into increased income from agriculture, which can be re-invested or used to satisfy other basic needs.

Food utilization has heightened importance for the nutritional status of women of childbearing age and young children (IFPRI 2014). The northern region of Nigeria has high levels of chronic malnutrition in young children, with one of the heaviest burdens of malnutrition in the world (Benson et al. 2017). Close to half of all children under five years of age in the Northeast and Northwest geopolitical zones of the country were estimated to be stunted in their growth for their age in 2013 (height-for-age z-score (HAZ) < -2.0), compared to 22 percent of children in the rest of Nigeria, and 2.3 percent in the population of well-nourished young children globally, from which the child growth standards are derived (NPC and ICF International 2014; de Onis and Blössner 1997).

Figure 11 presents the indicators of malnutrition in underfives – shares of young children who are stunted, wasted, or underweight – for all states of Nigeria and for the seven GFSS states in 2008. Kebbi State has the highest prevalence of child malnutrition in every category of measurement. While stunting is an issue of national concern with 40 percent of underfives in Nigeria, stunting rates in Kaduna and Kebbi states are 51 percent and 63 percent, respectively.

Figure 11. Share of children under five years of age who are stunted, wasted, or underweight in their growth, for the GFSS states, 2008



Source: NBS 2016 Annual Abstract of Statistics.

Benson et al. (2017) explain that food security at household and individual level is tied to economic access to food. Monetary poverty results in poor living standards which affects access to good health services and to food, raising the vulnerability of individuals to malnutrition. Based on 2010 data and a poverty line of USD 1.00 a day, around 70 percent of the population in the Northwest and Northeast zones (which includes Kebbi State) are poor (NBS 2012). The study of Benson et al. (2017) to identify the drivers of chronic (stunting) and acute (wasting) malnutrition in northern Nigeria, found that a broad range of sociological factors, including poor maternal and child nutritional caring practices, gender issues, poor sanitation, and inadequate access to safe drinking water, other public health services, and health facilities, are responsible for the high rates of child malnutrition in northern Nigeria. Households in Kebbi state were found to have notably low levels of access to safe water. This pattern is mirrored in most parts of northern Nigeria. These findings confirm the conceptual understanding of the determinants of child nutritional status, as laid out in the UNICEF framework (2013), which identifies access to clean water, adequate sanitation, and a healthy environment as among the important underlying determinants of child nutritional status. Also, immunization rates for children are especially low in northern Nigeria, particularly so in Kebbi, thus increasing the risk of illness being an immediate factor in causing acute undernutrition in young children (Benson et al. 2017).

5. CONCLUDING REMARKS

Building on earlier studies that looked at the trends and returns to federal level public expenditures on agriculture in Nigeria, this paper explored sub-national spending patterns at the state level over a nine-year period, as well as possibly related trends in agricultural and economic performance and household welfare.

An earlier three-state case-study found that at the sub-national level of the state and LGA the share of total public spending made up by agricultural spending is much larger than the share at federal level. This is understandable given the stronger role for sub-national governments in agricultural development. In other sectors, the role of the state and LGAs is not as prominent. However, we find that the average share of state-level expenditures in agriculture across all tiers as a proportion of aggregate state-level expenditures is still relatively low, averaging 3.86 percent from 2007 to 2015. While the prioritization of agriculture spending varies greatly year by year, variation over time does not have a discernible long run upwards or downwards trend. We also find that state-level expenditures in the public agriculture sector are more capital intensive than are state public expenditures as a whole. However, the capital share of total agriculture spending has been slowly declining over the last decade, as it is similarly doing across all of Nigeria's industrial sectors. Disaggregating government spending, of total sub-national recurrent expenditures, 3.31 percent are allocated to agriculture. In contrast, of total sub-national capital spending, 5.13 percent is dedicated to the sector. This higher share in capital spending to aggregate spending may reflect declining state and international support for ADP extension services that were historically well-funded two decades ago. Such financial support for agricultural extension services is considered to be recurrent spending.

Further research is needed to ascertain how the elasticity of agricultural output with regard to recurrent public spending in the sector compares to the elasticity of agricultural output with regard to capital public spending in the case of Nigeria or in West Africa, and whether the balance between these two could be optimized. In the absence of a more recently dated empirical study, Diakosavvas' 1990 cross-country panel study indicating that the elasticity of agricultural output with regard to recurrent spending is generally higher than that with regard to capital spending in the case of African countries might lead us to recommend that the steady shift toward agriculture spending that is more recurrent intensive is a move in the right direction for Nigeria. This would entail devoting more state funding within the agricultural sector to salaries, operating costs, the provision of agricultural extension services, and the like. As Benin et al. (2012) recommended the government of Ghana to do, increasing recurrent spending in agriculture will help balance recent increased capital spending in agriculture at the state-level in Nigeria.

Finally, we would like to stress the overall lack of any correlation seen in our assessment here between agricultural performance and state-level public expenditures in the agriculture sector and, similarly, between welfare indicators and those state-level agricultural public expenditures. That we are unable to detect any relationship is in part due to our data on each element of these relationships not being fully comparable. In particular, we have no time series data on welfare – here chronic child nutrition and food expenditures as a share of total expenditures. Consequently, no assessment can be made which would suggest that changes over time in these development indicators can be attributed to changes in state public expenditure levels in agriculture. This data incompatibility likely is as equal a factor in our finding no correlation between public expenditure patterns and development outcomes as any causal relationship (or absence of one) between expenditure levels and these outcomes. This clearly signals the need for increased investment in data systems in Nigeria to enable stronger assessments in the future of the impact of public expenditure patterns on agricultural and human development.

REFERENCES

Adesugba, M. and G. Mavrotas. 2016a. *Youth Employment, Agricultural Transformation and Rural Labor Dynamics in Nigeria.* IFPRI Discussion Paper No. 01579. International Food Policy Research Institute, Washington DC.

Adesugba, M. and G. Mavrotas. 2016b. *Delving Deeper into the Agricultural Transformation and Youth Employment Nexus: The Nigerian Case.* Nigeria Strategy Support Program Working Paper No. 31. International Food Policy Research Institute, Washington DC.

Africa Lead-IFPRI. 2012. *Report on Assessment of Nigeria Agriculture Transformation Agenda (ATA) and Capacity Building Needs.* Washington, DC: International Food Policy Research Institute.

Arimond, M., Wiesmann, D., Becquey, E., Carriquiry, A., Daniels, M.C., Deitchler, M., Fanou-Fogny, N., Joseph, M.L., Kennedy, G., Martin-Prevel, Y. and Torheim, L.E. 2010. "Simple food group diversity indicators predict micronutrient adequacy of women's diets in 5 diverse, resource-poor settings." *The Journal of Nutrition*, *140* (11): 2059S-2069S.

Arndt, C., C. Chuku, A. Adeniran, M. Adetutu, V. Ajayi, G. Mavrotas, and C. Onyekwena. 2018a. "Emerging from Nigeria's Macroeconomic Crisis." *The Conversation Africa* (September).

Arndt, C., C. Chuku, A. Adeniran, M. Adetutu, V. Ajayi, G. Mavrotas, and C. Onyekwena. 2018b. *Nigeria's Macroeconomic Crisis Explained*. NSSP Working Paper 52. Washington, D.C.: International Food Policy Research Institute.

Babu, S.C., Gyimah-Brempong, K., Nwafor, M., and Edeh, H. 2014. *Capacity assessment for achieving the Agricultural Transformation Agenda in Nigeria.* NSSP Working Paper 26. Washington, D.C.: International Food Policy Research Institute.

Benin, S., and Yu, B. 2013. *Complying with the Maputo declaration target: Trends in public agricultural expenditures and implications for pursuit of optimal allocation of public agricultural spending* (ReSAKSS Annual Trends and Outlook Report 2012). Washington, DC: International Food Policy Research Institute.

Benin, S., Mogues, T., Cudjoe, G. and Randriamamonjy, J. 2012. Public expenditures and agricultural productivity growth in Ghana. In: T. Mogues and S. Benin (eds.) *Public Expenditures for Agricultural and Rural Development in Africa*. London and New York: Routledge, Taylor and Francis Group.

Benson, T., Amare, M., Oyeyemi, M., and Fadare, O. 2017. *Study of the determinants of chronic malnutrition in northern Nigeria: Qualitative evidence from Kebbi and Bauchi states.* NSSP Working Paper 44. Washington, D.C.: International Food Policy Research Institute.

Collier, P. 1988. "Oil shocks and food security in Nigeria." *International Labor Review, 127* (6): 761-782.

de Onis, M., and M. Blössner. 1997. *WHO Global Database on Child Growth and Malnutrition*. Geneva: World Health Organization.

Diakosavvas, D. 1990. "Government expenditure on agriculture and agricultural performance in developing countries: An empirical evaluation." *Journal of Agricultural Economics* 41(3): 381–390.

Diao, X., Nwafor, M., Alpuerto, V., Akramov, K.T., Rhoe, V., and Salau, S. 2012. Nigeria. In X. Diao, J. Thurlow, S. Benin, and S. Fan (Eds.), *Strategies and Priorities for African Agriculture: Economywide Perspectives from Country Studies*. Washington, DC: International Food Policy Research Institute.

Ekpe, I.I., Okporie, E.O., Ogbodo, E.N. and Nwite, J.N. 2005. "Physico-chemical properties of four Ultisols under different vegetation cover in South-Eastern Nigeria." *Journal of Science. Agriculture, Food Technology, Environment*, *5*: 74-78.

Fan, S. and Zhang, X. 2008. "Public expenditure, growth and poverty reduction in rural Uganda." *African Development Review* 20 (3): 466–496.

Fan, S., Gulati, A. and Thorat, S. 2008. "Investment, subsidies, and pro-poor growth in rural India." *Agricultural Economics* 39 (2): 163–170.

Fan, S., Yu, B. and Jitsuchon, S. 2008. "Does allocation of public spending matter in poverty reduction? Evidence from Thailand." *Asian Economic Journal* 22(4): 411–430.

Fan, S., Zhang, L. and Zhang, X. 2004. "Reforms, investment and poverty in rural China." *Economic Development and Cultural Change* 52(2): 395–421.

FMARD (Federal Ministry of Agriculture and Rural Development). 2016. *The Green Alternative: The Agriculture Promotion Policy 2016-2020* (Policy and Strategy Document). Abuja.

FEWSNET 2014. “Nigeria - Livelihood Zones.” Online: http://shapefiles.fews.net.s3.amazonaws.com/LHZ/NG_LHZ_2014.pdf.

Gang, I., and Khan, H. 1990. “Foreign aid, taxes and public investment.” *Journal of Development Economics*, *34* (1-2): 355–69.

Hatzenbuehler, P. and G. Mavrotas. 2017a. *Macroeconomic Factor Influence on Agricultural Program Sustainability in Kaduna State, Nigeria.* Nigeria Strategy Support Program Working Paper No. 48. International Food Policy Research Institute, Washington DC.

Hatzenbuehler, P. and G. Mavrotas. 2017b. *How Macroeconomic Factors May Influence Agricultural Program Sustainability: Evidence from Cross River State, Nigeria.* Nigeria Strategy Support Program Working Paper No. 50. International Food Policy Research Institute, Washington DC.

Heller, P.S. 1975. “A model of public fiscal behavior in developing countries: aid, investment, and taxation.” *The American Economic Review*, *65* (3): 429-445.

IFPRI (International Food Policy Research Institute). 2014. G*lobal Nutrition Report 2014: Actions and Accountability to Accelerate the World’s Progress on Nutrition*. Washington, DC: IFPRI.

IMF (International Monetary Fund). 2016. *Nigeria* (IMF Country Report No. 16/101). Washington, DC: IMF.

Inoni, O.E., D.G. Omotor, and F.N. Adem. 2006. “The effect of oil spillage on crop yield and farm income in Delta State, Nigeria.” *Journal of Central European Agriculture*, 7 (1): 41-48.

Iorlamen, T.R., Abu, G.A., and Lawal, W.L. 2014. “Assessment of expenditure on food among urban households and it’s implication for food security: Evidence from Benue State, Nigeria.” *African Journal of Food, Agriculture, Nutrition and Development*, *14* (2).

Johnson, M.E., and Masias, I. 2017. *Assessing the state of the rice milling sector in Nigeria: The role of policy for growth and modernization.* Nigeria Strategy Support Program Working Paper No. 40. International Food Policy Research Institute, Washington DC.

Khan, H.A., and Hoshino, E. 1992. “Impact of foreign aid on fiscal behaviour of LDC governments.” *World Development 20* (10): 1481–1488.

Kuku-Shittu, O., Mathiassen, A., Wadhwa, A., Myles, L. and Ajibola, A. 2013. *Comprehensive food security and vulnerability analysis: Nigeria*. IFPRI Discussion Paper 1275. Washington, D.C.: International Food Policy Research Institute.

MAFAP (Monitoring and Analysing Food and Agriculture Policies). 2013. *Analysis for Incentives and Disincentives for Rice, Cassava, Maize, Sorghum, Sugar, Palm Oil, and Cocoa in Nigeria.* Monitoring and Analysing Food and Agriculture Policies project. Rome: Food and Agriculture Organization of the United Nations.

Mavrotas, G. 2002. “Foreign aid and fiscal response: does aid disaggregation matter?” *Weltwirtschaftliches Archiv (Review of World Economics), 138* (3): 534-559.

Mavrotas, G. 2005. “Aid heterogeneity: Looking at aid effectiveness from a different angle.” *Journal of International Development, 17* (8): 1019-1036.

Mogues, T. and Olofinbiyi, T. 2016. *Institutions and public agricultural investments: A qualitative study of state and local government spending in Nigeria*. Nigeria Strategy Support Program Working Paper No. 37. International Food Policy Research Institute, Washington DC.

Mogues, T., Morris, M., Freinkman, L., Adubi, A., and Ehui, S. 2012, “Agricultural Public Spending in Nigeria” in Mogues, T. (Ed.), Benin, S. E. (Ed.). (2012). *Public Expenditures for Agricultural and Rural Development in Africa.* London: Routledge.

Mogues, T., S. Fan, and S. Benin. 2015. “Public Investments in and for Agriculture.” *European Journal of Development Research* 27: 337–352.

National Bureau of Statistics (NBS). 2007. *Nigeria - National Survey of Agricultural Export Commodities 2007*, Fourth round Abuja: NBS.

National Bureau of Statistics (NBS). 2009. Harm*onized Nigeria Living Standard Survey Part A (CWIQ) Draft Report 2008/09* Abuja: NBS.

National Bureau of Statistics (NBS). 2016. *Annual Abstract Statistics* Volume 1 Abuja: NBS.

National Population Commission (NPC) and ICF International (2014) *Nigeria Demographic and Health Survey 2013*. Abuja and Rockville, MD, USA: NPC and ICF International.

Olofinbiyi, T. and Mogues, T. 2016. *Who Influences Government Spending in Agriculture? The Roles of Public Actors in Sub-national Funding Allocation in Nigeria*. Nigeria Strategy Support Program Working Paper No. 36. International Food Policy Research Institute, Washington DC.

Olomola, A.S., T. Mogues, T. Olofinbiyi, C. Nwoko, E. Udoh, R.A. Alabi, J. Onu, and S. Woldeyohannes. 2014. *Analysis of Agricultural Public Expenditures in Nigeria: Examination at the Federal, State, and Local Government Levels.* IFPRI Discussion Paper 01395. Washington, DC: International Food Policy Research Institute.

Ruel, M., J. Harris, and K. Cunningham. 2012. "Measuring Dietary Quality in Developing Countries: A Review of the Usefulness of Individual Dietary Diversity Indicators." Chapter 18 in *Diet Quality: An Evidence-Based Approach*. V.R. Preedy, ed. New York: Springer.

SPARC (State Partnership for Accountability, Responsiveness and Capability). 2015. "Niger State Agricultural Sector 2016 – 2018 Medium-Term Sector Strategy (MTSS)". Online: http://www.sparc-nigeria.com/RC/files/1.2.17_Niger_State_Agriculture_2016_2018_MTSS_Rollover.pdf

Ugbomeh, B.A., and Atubi, A.O. 2010. "The role of the oil industry and the Nigerian State in defining the future of the Niger Delta Region of Nigeria." *African Research Review*, *4* (2).

United Nations Children's Fund. 2013. *Improving Child Nutrition: The Achievable Imperative for Global Progress*. New York: UNICEF.

United States Agency for International Development (USAID). 2018. "Global Food Security Strategy (GFSS) Nigeria Country Plan." Accessed November 13, 2018. https://www.usaid.gov/sites/default/files/documents/1867/Nigeria_GFSS_Country_Plan_-_Final_WS_Edits_2.pdf

WDI (World Development Indicators). 2016. *World Development Indicators*. Online database. Washington DC: World Bank.

World Bank. 2007a. *World Development Report 2008: Agriculture for Development*. Washington DC: World Bank.

World Bank. 2007b. *Nigeria—A fiscal agenda for change: Public expenditure management and financial accountability review.* Poverty Reduction and Economic Management, Africa Region. Washington, DC: World Bank.

World Bank. 2008. *Nigeria Agriculture Public Expenditure Review*, Report No. 44000-NG, Agriculture and Rural Development Unit, Sustainable Development Network, West Africa Country Department 2, Africa Regional Office. Washington, DC: World Bank.

About the Author(s)

George Mavrotas is a Senior Research Fellow and Program Leader of IFPRI's Nigeria Strategy Support Program, based in Abuja. **Tewodaj Mogues** is a Senior Economist and Technical Assistance Advisor in the Fiscal Affairs Department of the Expenditure Policy Division of the International Monetary Fund, based in Washington, DC. At the time this research was done, Dr. Mogues was a Senior Research Fellow in IFPRI's Development Strategy and Governance Division, based in Washington DC. **Motunrayo Oyeyemi** is a Research Analyst in IFPRI's Nigeria Strategy Support Program, based in Abuja. **Jennifer Smart** is a Senior Research Analyst in IFPRI's Development Strategy and Governance Division, based in Washington DC. **Zhe Xiong** is a Consultant with IFPRI, based in Washington DC.

Acknowledgments

This paper has been prepared as part of the Feed the Future Nigeria Agricultural Policy Project. We are grateful to the United States Agency for International Development (USAID) and the CGIAR Research Program on Policies, Institutions, and Markets (PIM) for providing financial assistance to conduct this study. We would like also to thank Todd Benson for very helpful comments and suggestions on an earlier version, of great benefit to this paper.

INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE
1201 Eye Street, NW | Washington, DC 20005-3915 USA
T: +1.202.862.5600 | F: +1.202.862.5606
Email: ifpri@cgiar.org | www.ifpri.org

IFPRI-ABUJA
c/o International Fertilizer Development Center
No.6 Ogbagi Street | Off Oro-Ago Crescent, Garki II
Abuja | Nigeria
ifpri-nigeria@cgiar.org | nssp.ifpri.org

The Nigeria Strategy Support Program (NSSP) is managed by the International Food Policy Research Institute (IFPRI) and is financially made possible by the generous support of the American people through the United States Agency for International Development (USAID) in connection with the Feed the Future Nigeria Agricultural Policy Project. The research presented here was conducted as part of the CGIAR Research Program on Policies, Institutions, and Markets (PIM), which is led by IFPRI. This publication has been prepared as an output of NSSP. It has not been independently peer reviewed. Any opinions expressed here belong to the author(s) and do not necessarily reflect those of IFPRI, USAID, PIM, or CGIAR.