NATIONALLY FINANCED AGRICULTURAL RESEARCH

A Case Study on Nigeria

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AGRICULTURAL R&D: INVESTING IN AFRICA'S FUTURE
Analyzing Trends, Challenges, and Opportunities

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Acronyms and Abbreviations

CFI	coefficient of funding instability
FTI	funding trend index
MDAs	Ministries, Departments, and Agencies
MTSS	medium-term sector strategy
NARP	National Agricultural Research Project
NPC	National Planning Commission
R&D	research and development

Abstract

The national budget process is an important factor in a government's ability to implement development plans. To that end, this paper analyses the budget cycle of national agricultural research institutes during 2001–11 in relation to their parent ministry, the Federal Ministry of Agriculture and Rural Development, with the objective of assessing the process in terms of critical elements of good governance, such as efficiency, effectiveness, transparency, and accountability. In theory, the budget process acts as a policy instrument to decouple the dual structure of the agricultural economy—which comprises both research and nonresearch components—with a view to improving the performance of the sector. Results indicate an increased preference for R&D during the period, accompanied by high degree of funding instability at the institutes. Agricultural research was emphasized much less in the the Ministry's capital budget than in its recurrent budget. Furthermore, on average, the approved capital allocation to the institutes was higher than projected for the period, which in turn is higher than disbursed funding for the period. By comparison, the Ministry's projected capital allocation was higher than was ultimately approved. The budget process was also fraught with considerable discrepancies and delays, coupled with an overt disconnect between planning and budgeting.

The high instability of national government funding to the institutes correlates with a period of instability at the Ministry, during which time numerous significant changes occurred in both management and policy. The completion of the World Bank–assisted National Agricultural Research Project during the period caused a drastic drop in overall funding to the institutes, accompanied by pronounced volatility in terms of budget levels, fiscal discipline, and the disbursement of appropriated funds. The habitual late submission of budget proposals to the National Assembly causes both funding approvals and disbursements to be late, and often leads to conflicts in the budget process. A natural consequence of delayed funding disbursement is the challenge it presents the institutes in completing planned activities and spending their full budgets. Of necessity, planned activities spillover into the next year, and fourth-quarter disbursements frequently occur as late as the end of December, requiring an extension of the budget's implementation until March of the following year. The situation with the institutes is further complicated by the lack of a monitoring and evaluation culture, thereby rendering the budget process impotent in acting as a policy instrument to unlock the structural interconnectedness of the Ministry's research and nonresearch programs for the purpose of improving the performance of the agricultural economy as a whole.

1. INTRODUCTION

National budgets are a fundamental determining factor in a government's ability to effect development plans. Furthermore, good governance—the hallmarks of which are efficiency, effectiveness, transparency, and accountability—requires strict adherence to "due process" in the implementation and financing of development initiatives. This case study examines the concept of "due budget process" in the context of agricultural research and development (R&D) in Nigeria, with a view to providing empirical answers to critical questions. Developing countries are often criticized for a lack of sustained commitment to the agricultural sector based on consistently low and often erratic levels of public funding for research in general, and for agricultural research in particular. By examining the budget process, including the empirical linkages between its research and nonresearch components, the study endeavors to "decouple" the agricultural economy based on the instrumentality of the budget process (Ayoola 1997). Thus the budget is the instrument by which governments play a catalytic role in economic development, thereby strategically stimulating the economy, and hopefully generating income, employment, and economic stability in the Keynesian tradition (Ayoola and Oboh 1999).[1]

A recent study found that agricultural research spending in Nigeria doubled during 2000–08, largely as a result of higher salary levels, together with substantial investments in the rehabilitation of research infrastructure and equipment (Flaherty et al. 2010); however, this increase followed a decade of severe underfunding. Nigeria's budget process has been described as complex and lacking in transparency. Research institutes[2] are required to provide yearly work plans and associated budgets to the Federal Ministry of Agriculture and Natural Resources, which submits a consolidated budget for adjustment and approval to the Federal Ministry of Finance; the budget is then sent to the National Assembly to be passed as an appropriations bill. Marked disparities often occur between the provisions of the final approved budget and those requested by the institutes. Furthermore, funds are often delayed for long periods, and shortfalls in funding disbursements are common.

Thus the federal government plays a critical role in the scientific transformation of agriculture, particularly in terms of value-chain development. As a result, planned restructuring of the national budget to intensify the focus on agricultural research is critical. Assuming, based on the budgetary processes of the past decade, that the national government indeed favors nonresearch- to research-based initiatives as a means of developing the agricultural sector, a number of questions arise:

- How is government funding allocated to national agricultural research institutes from the perspective of processes (timelines, approvals, transparency, and so on)?
- What are the major funding sources for research institutes (core allocations, donor contributions, and other mechanisms, such as competitive funds and internally generated revenues)?
- How are yearly budgets allocated by governments across salaries, operating and program costs, and capital investments?
- What causes discrepancies between budgeted allocations and actual disbursements?

[1] Following from the work of Lewis (1955), Fei and Ranis (1969), Thorbecke and Field (1969), and others, the original proposition of the "deathly embrace theory" (Ayoola 1997) was founded on the presumption of a dual economic structure, whereby the natural interdependence of the agricultural and nonagricultural sectors causes each to wait for the other to perform its reciprocal role. Persistent failure in any one sector can cause the whole economy to falter. As subsequently tested (Ayoola and Oboh 1999), the theory elucidates the behavior of policy authorities in allocating financial resources through their national budgets, thereby revealing their implicit preferences for and against agriculture. Results indicated an unsatisfactory preference rating for agriculture relative to nonagriculture in Nigeria, which by extension likely also holds for federally funded research- and nonresearch-based agricultural programs.

[2] Nigeria has numerous research institutes administered by various ministries; currently, 15 commodity-based research institutes operate under the Federal Ministry of Agriculture and Natural Resources and are located across the country's various agroecological zones.

- What causes delays in the disbursement of funds?
- What are the consequences of discrepancies and delays in the disbursement of funds?
- How does a large influx of donor projects affect government funding generally and by cost category?
- What is the impact of national competitive funding mechanisms on government funding for agricultural research institutes?
- What has been the impact of reduced donor funding on the volatility of yearly R&D budgets?

This study focuses on the 15 semiautonomous government agricultural research agencies in Nigeria, operating under the Agricultural Research Council of Nigeria (Box 1). The Council, established in 2007 as a semiautonomous agency of the Federal Ministry of Agriculture and Rural Development, endeavors to enhance the operating efficiency and focus of the national agricultural research institutes, thereby supporting the development of the country's national agricultural research system. To that end, the goal of this study is to provide a better understanding of national budget process as it affects institutional funding. Moreover, it is hoped that the study will also contribute to the international research community's knowledge base in order to facilitate more effective external support to the institutes.[3]

Box 1. Nigeria's agricultural research agencies

The 15 national agricultural research institutes included in this study focus on commodity-based research. They include the National Cereals Research Institute (NCRI), Badegi; Lake Chad Research Institute (LCRI), Maiduguri; National Root Crops Research Institute (NRCRI), Umudike; Nigerian Institute for Oil Palm Research (NIFOR), Benin; Nigerian Institute for Oceanography and Marine Research (NIOMR), Lagos; Cocoa Research Institute of Nigeria (CRIN), Ibadan; Institute of Agricultural Research and Training (IAR&T), Ibadan; National Institute for Freshwater Fisheries Research (NIFFR), New Bussa; National Agricultural Extension Research and Liaison Services (NAERLS), Zaria; Institute of Agricultural Research (IAR), Zaria; National Veterinary Research Institute (NVRI), Vom; National Horticultural Research Institute (NIHORT), Ibadan; Nigeria Stored Product Research Institute (NSPRI), Ilorin; Rubber Research Institute of Nigeria (RRIN), Benin; and National Animal Product Research Institute (NAPRI), Zaria.

Numerous other agencies conduct agricultural research, including 11 federal colleges of agriculture, 3 universities and 40 faculties of agriculture, 8 faculties of veterinary medicine, and 6 international agricultural research centers (6), as well as nongovernmental and farmer organizations, and private companies.

2. BUDGET PROCESS

In addition to constituting an appropriations bill, passed annually by the National Assembly, the national budget must comply with numerous other statutes that grant powers to the Federal Ministry of Finance and the Budget Office, which in turn issue and oversee ministerial guidelines, requiring strict compliance.[4] Hence, the executive and legislative arms of government have dual power in preparing and executing budget processes, which has historically promoted a contentious relationship.

The National Planning Commission oversees the production of a medium-term sector strategy, which provides the context within which the Federal Ministry of Finance carries out its budgetary obligations. The individual ministries, departments, and agencies prepare rolling three-year planning budgets that link short-term goals with the government's long-term development agenda and sets a moving target for programs during the current planning horizon. Nigeria's Vision 2020, for example, outlines guidelines for planning and rolling

[3] The analytical framework underpinning this study specifies and estimates relevant statistics for discerning the trends and patterns in national budget allocations. The empirical analysis was founded on secondary data from official sources, particularly the series of yearly approved estimates published by the Federal Ministry of Finance, complemented by institutional information from Agricultural Research Council of Nigeria.

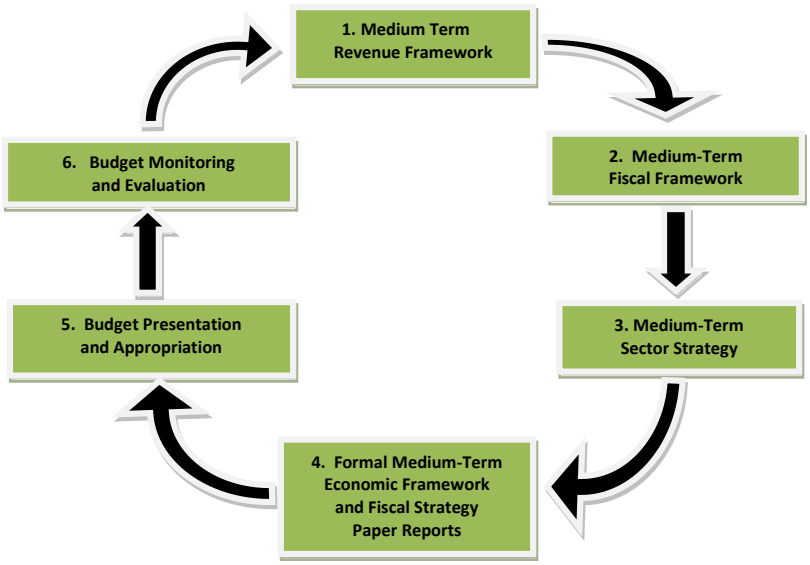
[4] For more details about the budget process, see Okogu (2011), Budget Office of the Federation (2010), Bankole and Olomola (2006), and World Bank (1998).

expenditures in line with available resources, whereby the Ministry of Finance and Budget Office provide indicative expenditure ceilings based on medium-term expenditure and revenue frameworks, and other considerations such as the prior year's budget performance, existing budgetary commitments, and current government priorities. The Ministry of Finance also stipulates the means by which budgets are prepared and funding is appropriated, along with rules about the budget deficit (at a standard level of 3 percent of gross domestic product, except for national emergencies and other economic exigencies). Thus the medium-term expenditure framework provides the basis for linking policy, planning, and budgeting with a view to achieving overall fiscal discipline, strategic prioritization, and operational performance (World Bank 1998). This enables the Ministry of Finance to balance revenues and expenditure and thereby achieve fiscal balance in the form of a medium-term fiscal framework.[5]

To summarize, the yearly budget process involves a series of steps as described below (Figure 1).

1. The Minister of Finance presents a fiscal strategy paper, along with the medium-term economic framework, for consideration and endorsement by the Federal Executive Council (of ministers) and the National Economic Council (of state and federal representatives).
2. The fiscal strategy paper and medium-term economic framework, as endorsed, are then sent to the National Assembly for approval.
3. Through the fiscal strategy paper, a call is issued to all ministries, departments, and agencies requesting that they submit a budget for the first year of the plan; subsequently, bilateral discussions are held to prioritize expenditures.
4. The Federal Ministry of Finance and Budget Office prepare an executive budget proposal and supporting documentation for presentation to the president and eventual submission to the National Assembly;

Figure 1. Annual budget cycle



Source: Budget Office of the Federation 2011.

[5] The Federal Ministry of Finance coordinates this framework with input from key agencies, such as the National Planning Commission, Central Bank of Nigeria, Office of the Accountant General of the Federation, Bureau of Public Enterprises, and Debt Management Office to reconcile macroeconomic data. Thereafter, initial bilateral discussions commence with individual agencies to prepare three-year revenue estimations.

5. The National Assembly organizes a series public hearings at which ministries, departments, and agencies defend their budget estimates before the relevant committees.
6. The National Assembly passes the budget as an appropriations bill for approval by the President.
7. The President signs the appropriation bill into law for immediate implementation, supported by quarterly monitoring and evaluation.

2. ANALYSIS AND RESULTS

Time-series data on funding to 15 national agricultural research institutes (hereafter referred to as "the institutes") included in the study for the period 2001–10 are presented in Table 1, along with time-series data indicating the total allocations to the agricultural sector as a whole.[6] This information provides the basis for assessing the stability of funding to the institutes over the years (Figure 2), and is the basis for analyzing whether a bias toward or against agriculture is reflected in the allocation of funding.

Table 1. Total approved national budget allocation to the institutes by source, 2001–10

Year	Total budgetary allocation (core government funding)		Share allocated to research
	Institutes	Ministry	
	(million current Naira)		(%)
2001	3,515	32,293	10.9
2002	6,071	17,843	34.0
2003	3,758	36,910	10.2
2004	5,605	18,552	30.2
2005	7,737	17,837	43.4
2006	7,687	30,800	25.0
2007	9,590	33,764	28.4
2008	21,866	134,860	16.2
2009	14,860	166,924	8.9
2010	20,578	63,543	32.4
Yearly average	10,127	55,332	18.3
Coefficient of funding instability (%)	53.2	7.7	–

Source: Compiled by authors from survey data.
Note: The coefficient of funding stability is defined as the mean deviation from the mean level of funding as a percentage of the mean level of funding. "Institutes" indicates the 15 national agricultural institutes included in the study (see Box 1); "Ministry" indicates the Federal Ministry of Agriculture and Rural Development.

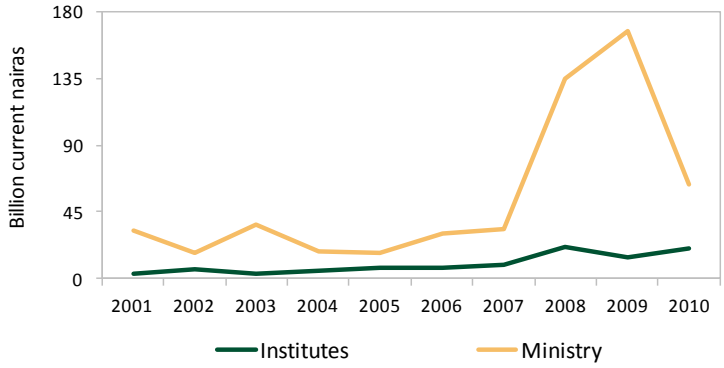
A combined budget of about N101.3 billion (equivalent of US$675.3 million) was approved for the 15 institutes over the 10-year period under study, ranging from about N3.5 billion in 2001 to N21.9 billion in 2008. The total allocation to agricultural research as a percentage of the budgetary allocation to the Federal Ministry of Agriculture and Rural Development during the 2001–10 ranged from 9 percent in 2009 to 43 percent in 2005.

Stability and fluctuation in the flow of funding was measured by the coefficient of funding instability (CFI), defined as the mean deviation from the mean level of funding as a percentage of the mean level of funding. Thus the higher the CFI, the lower the stability of the flow of funding, and the lower the ability of the institutes to plan and conduct their mandated activities. Conversely, the lower the CFI, the higher the stability of the flow of funding, and the higher the ability of the institutes to plan their mandated activities. Results indicate a value of 53 percent for the institutes as a whole—too high for effective planning of their activities. Thus the revelation of increased preference for agricultural R&D

[6] The magnitude of external funding, such as donor contributions and internally generated revenues, was negligible during the period under review; hence, data on these sources were excluded from the analysis.

during the period of analysis as pointed out by Flaherty et al. (2010) was accompanied by high degree of funding instability at the institutes.

Figure 2. Stability of total funding allocations to the institutes, 2001–10



Source: Table 1.
Note: Data indicate core funding levels.

Time-series data on the financial provisions of the institutes and the ministry as a whole are presented in Table 2, disaggregated as recurrent expenditures and capital investments. This information provides the basis for determining the stability of fund allocations (Figure 3). N31.8 billion was approved as capital allocations to the institutes during the 10-year period, ranging from N0.6 billion in 2006, to N8.3 billion in 2008. N69.4 billion was approved as recurrent allocation to the institutes, ranging from N2.2 billion in 2001 to N13.7 billion in 2010. The capital expenditure allocation to the institutes as a percentage of the allocation to the ministry was 9 percent on average, compared with 47 percent for the recurrent budget allocation. This indicates that agricultural research was much less preferred in the capital budget than in the recurrent budget.

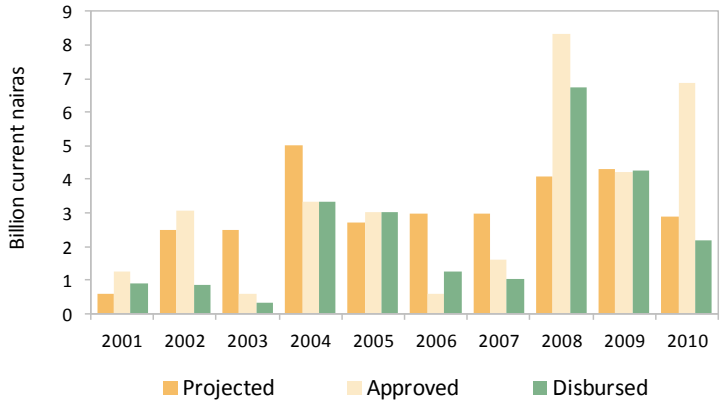
The observed trend of the flow of funding was measured using a funding trend index (FTI), defined as the value of the slope parameter of a linear trend equation through a regression analysis of the time-series data. Thus a positive FTI value indicates an upward trend in funding flows, while a negative value indicates a downward trend. The magnitude of the value itself indicates the steepness of the slope or the yearly rate of increase/decrease. Results indicate a positive FTI value in all cases, implying that the yearly flow of funding followed an upward trend for both capital and recurrent budget allocations. Nevertheless, the value is variable for different budget categories; the recurrent allocation (N1.4 billion) increased faster than capital allocation (N0.6 billion), and the allocation to salaries (N1.1 billion) increased faster than the allocation to overhead (N0.3 billion). Furthermore, this pattern holds true for all sectors administered by the ministry.

Table 2. Total approved budget allocations to the institutes and ministry by cost category, 2001–10

Year	Aggregation level	Capital expenditures	Recurrent budget		
			Salaries	Operating costs	Total
		(million current Naira)			
2001	Institutes	1,277	1,988	251	2,239
	Ministry	10,952	4,475	720	5,195
2002	Institutes	3,066	2,863	141	3,004
	Ministry	12,603	4,791	449	5,240
2003	Institutes	604	3,037	117	3,154
	Ministry	11,016	7,080	385	7,439
2004	Institutes	2,181	3,21452	110	3,324
	Ministry	10,739	7,528	285	7,813
2005	Institutes	3,030	4,450	267	4,717
	Ministry	7,539	9,287	1,001	10,288
2006	Institutes	577	6,739	371	7,110
	Ministry	15,398	12,980	2,422	15,402
2007	Institutes	1,616	6,641	1,333	7,974
	Ministry	17,633	12,675	3,455	16,130
2008	Institutes	8,319	11,947	1,601	13,548
	Ministry	110,318	19,145	5,397	24,547
2009	Institutes	4,210	8,679	1,965	10,644
	Ministry	139	22,045	595	27,996
2010	Institutes	6,873	10,933	2,782	13,716
	Ministry	31,862	21,475	5,432	26,907
Institute yearly average		**3,175**	**6,049**	**894**	**6,943**
Ministerial yearly average		**36,699**	**12,148**	**2,014**	**14,162**
Institute as a share of ministerial total (%)		8.7	49.8	44.4	49.0
Institute range		7,741	9,959	2,673	
Ministerial range		99,367	17,254	5,112	19,347
Institute funding trend index		562	1,081	283	1,364
Ministerial funding trend index		9,682	2,141	481	2,850

Source: Compiled by authors from survey data.
Note: "Institutes" indicates the 15 national agricultural research institutes included in the study (see Box 1); "Ministry" indicates the Federal Ministry of Agriculture and Rural Development.

Figure 3. Capital allocations to the institutes at different phases of the budget process



Source: Table 2.
Note: Data indicate core funding levels.

Time-series data on capital and recurrent allocations to the institute were also analyzed at three phases of the budget process—that is, the projection, approval, and disbursement phases (Table 3). Discrepancies are expected to occur across phases in both absolute and relative terms; however, the main area of focus is low disbursement levels compared with approved allocation levels (Figure 4). The mean *projected* capital allocation to the institutes was about N3.1 billion per year compared with the mean *approved* capital allocation of N3.3 billion per year and the mean *disbursed* capital allocation of N2.4 billion per year. For the agricultural sector as a whole, the mean projected capital allocation was N76.9 billion, compared with the mean approved capital allocation of N39.7 billion per year, and with the mean disbursed allocation of N26.3 billion per year.[7] This implies that, on average, the approved capital allocation to the institutes was higher than projected for the period, which in turn is higher than disbursed funding for the period (Figure 3). By comparison, the Ministry's projected allocation was higher than its approved allocation, which in turn was higher than the disbursed allocation.

Table 3. Capital allocations to the institutes and ministry at different phases of budget process, 2001–10

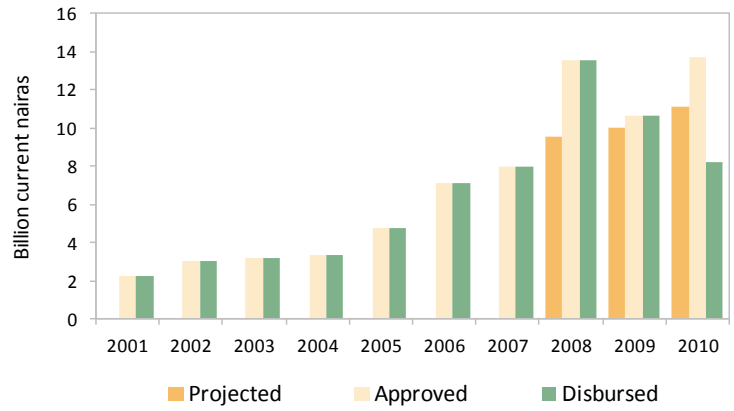
	Institutes			Ministry		
	Projected	Approved	Disbursed	Projected	Approved	Disbursed
Year			(Million current Naira)			
2001	590	1,277	896	15,000	10,952	7,773
2002	2,500	3,066	859	15,000	12,603	3,580
2003	2,500	604	344	17,000	11,016	6,271
2004	5,000	3,324	3,324	18,000	10,739	10,739
2005	2,700	3,030	3,030	18,000	7,539	7,539
2006	3,000	577	1,239	17,000	15,398	15,398
2007	3,000	1,616	1,056	19,000	17,633	17,633
2008	4,091	8,319	6,740	300,000	110,318	22,704
2009	4,320	4,210	4,250	200,0000	138,929	139,211
2010	2,875	6,873	2,206	150,301	62,080	31,862
Yearly average	**3,058**	**3,290**	**2,394**	**76,930**	**39,721**	**26,271**
Share (%)	–	107.6	72.8	–	51.6	66.1

Source: Compiled by authors from survey data.
Notes: "Institutes" indicates the 15 national agricultural research institutes included in the study (see Box 1); "Ministry" indicates the Federal Ministry of Agriculture and Rural Development. Shares reflect average approved as a percentage of average projected or average disbursed as a percentage of average approved.

This phenomenon reflects the common practice of "padding" the planning budget, suggesting that the capacity of the institutes to lobby for higher core allocations is probably higher at the national assembly level than at the ministerial level, and that it is also higher than the capacity of the ministry as a whole to attract higher allocations to the entire sector at national assembly level. Nonetheless the discretionary allocation powers of the Minister would prevail upon the institutes regardless, as is indicated by the lower levels of disbursed funding to the institutes, which was less than either the projected or approved funding allocations. Both features of greater lobbying capacity on the part of the institutes, compared with the ministry, are indicated in the yearly allocations for 2008, 2009, and 2010, in that approved allocations were extremely high—induced by the establishment of ARCN; this suggests that the council was better able to lobby for funding on behalf of the institutes than the individual institutes were themselves. Nevertheless, the disbursed allocations were also very low, progressively decreasing over the 2008–10 period.

[7] In this case, the possibility of an additional budget allocation to the agricultural sector exists through a revolving fund allocated to the provision of a fertilizer subsidy. In 2010 this subsidy amounted to N22.3 billion, equivalent to 70 percent of the capital expenditures of the rest of the ministry that year (N31.9 billion).

Figure 4. Recurrent allocations to the institutes at different phases of the budget process, 2001–10



Source: Compiled by authors from survey data.
Note: Data indicate core funding levels.

The mean approved recurrent allocation to the institutes was N6.9 billion per year, while the mean disbursed recurrent allocation was N6.4 billion per year (Table 4). The mean approved recurrent allocation to the agricultural sector as a whole was N14.7 billion, whereas the mean disbursed allocation was N11.5 billion. This implies that, on average, the disbursed recurrent allocation to the institutes was lower than the approved allocation; meaning that the same pattern is prevalent for the ministry as a whole. These discrepancies create an expectation of funding shortfalls among the institutes, suggesting the possibility of budget padding, whereby the institutes engage in an implicit evaluation of the magnitudes of shortfalls, so as to top up the projected figures and offset the expected shortfalls .

Table 4. Recurrent allocations to the institutes by different phases of the budget process, 2001–10

	Institutes			Ministry		
Year	Projected	Approved	Disbursed	Projected	Approved	Disbursed
2001	na	2,239	2,239	5,195	5,195	5,195
2002	na	3,004	3,004,	5,240	5,240	5,240
2003	na	3,154	3,154,	7,439	7,439	7,439
2004	na	3,324	3,324,	7,813	7,813	7,813
2005	na	4,717	4,717	10,288	10,288	10,246
2006	na	7,110	7,110	15,402	15,402	15,402
2007	na	7,974	7,974	16,130	16,130	16,130
2008	9,523	13,548	13,548	18,912	24,541	14,725
2009	9,999	10,644	10,644	22,045	27,996	16,797
2010	11,075	13,716	8,230	31,584	26,907	16,144
Yearly average	**na**	**6,943**	**6,394**	**14,005**	**14,695**	**11,513**
Share (%)	–	–	92.1	–	104.9	78.3

Source: Compiled by authors from survey data.
Notes: "Institutes" indicates the 15 national agricultural research institutes included in the study (see Box 1); "Ministry" indicates the Federal Ministry of Agriculture and Rural Development. . Shares reflect average approved as a percentage of average projected or average disbursed as a percentage of average approved.

The timelines of various financial **provisions** to the institutes indicate divergence between the normative and actual dates of different phases of the budget process—once again, of the projection, approval, and disbursement phases (Table 5). This information facilitates an assessment of disparities across phases and provides insights into the reasons for the implementation delays. This amounted to an average yearly delay of 45 days for funding approval delay and 58 days for funding disbursal.

Table 5. The yearly timeline of the budget process for the institutes, 2001–10

	Approval			Disbursement		
Year	Normative	Actual	Disparity (days)	Normative	Actual	Disparity (days)
2001	December 31	December	–14	January 1	April	105
2002	December 31	April	105	January 1	March	74
2003	December 31	March	74	January 1	February	59
2004	December 31	March	74	January 1	March	74
2005	December 31	February	46	January 1	March	74
2006	December 31	February	46	January 1	March	74
2007	December 31	January	15	January 1	February	59
2008	December 31	January	15	January 1	February	59
2009	December 31	January	15	January 1	January	15
2010	December 31	March	74	January 1	February	59
Average delay	**–**	**–**	**45**	**–**	**–**	**55**

Source: Compiled by authors from survey data.
Notes: "Institutes" indicates the 15 national agricultural research institutes included in the study (see Box 1). Disbursement is based on the issuance of a warrant of release by the accountant general (that is, an authority to incur expenses). Taking mid-month as the standard date, in 2001 approval occurred before the normative deadline.

The timelines for the implementation of the budget by the National Veterinary Research Institute, which can be regarded as a modal institute, indicate the divergences from normative to actual deadlines for two key activities associated with the budget cycle: (1) use of funding and (2) monitoring and evaluation of the use of funding (Table 6). This is with a view to providing suggested explanations for delays in implementing budget processes (data on the actual commitment of expenditures by the institutes were not available). As a typical institute, the National Veterinary Research Institute regularly took 15 months to spend its full funding allocation funds, rather than the expected/planned 12 months. In addition, of the intended 40 planned monitoring and evaluation activities in relation to the Institute's budget, only 14 took place.

Table 6. The yearly timeline for spending actual allocations by the institutes, 2001–10

	Duration of full expenditure of disbursed funding (Number of months)			Monitoring and evaluation including legislative oversight (Number of activities)		
Year	Normative	Actual	Disparity	Normative	Actual	Disparity
2001	12	15	3	4	2	2
2002	12	15	3	4	1	3
2003	12	15	3	4	1	3
2004	12	15	3	4	1	3
2005	12	15	3	4	1	3
2006	12	15	3	4	2	2
2007	12	15	3	4	2	2
2008	12	15	3	4	1	3
2009	12	15	3	4	1	3
2010	12	15	3	4	2	2
Average delay	**12**	**15**	**3**	**4**	**1.4**	**2.6**

Source: Compiled by authors from survey data.
Notes: "Institutes" indicates the 15 national agricultural research institutes included in the study (see Box 1). The institutes have until March of the following year to spend the budget allocations. The process stipulates that monitoring and evaluation activities be undertaken on quarterly basis, including discretionary legislative oversight.

3. DISCUSSION

The Budget Allocation Process

The research community in Nigeria has highlighted the need to reclassify R&D from its traditional (inappropriate) categorization as "overhead" in the recurrent budget, to a component of the capital budget. The revised breakdown suggested by the Agricultural Research Council of Nigeria would be as follows:

1. ***Administrative capital*** comprising the cost that provide an operating environment for the Institutes to fulfill their mandate, for which the direct beneficiaries are the staff of the institutes; examples include salaries and related costs.
2. ***Program capital*** comprising expenditures required to deliver benefits to farmers, processors, and other end-users; examples include laboratory consumables, experiment farms, research communication, travel, and relevant workshops and seminars)
3. ***Development capital*** comprising items that ultimately remain with the benefiting communities; examples include technology prototypes developed for demonstration or outreach purposes

The budget process is subject to the influence of interest groups, which does not rule out the possibility of bribes. The recurrent budget comprises salaries and operating costs, which area paid on a monthly basis through an "authority to incur expenditure." The Budget Office estimates the cost of salaries by calculating the number and type of employees against a salary scale for each ministry, department, or agency; operating costs are estimated by adding 5 percent to the preceding year's allocation, although exceptions occur through lobbying. As previously discussed, this rate of yearly increase is faster than the increases for either salaries or capital expenditures, causing concern that the national budget is skewed in favor of recurrent expenses. As a result, the National Assembly has resorted to cutting proposed allocations to operating costs in order to increase capital allocations, which include all infrastructure-related expenses, such as the construction or rehabilitation of buildings, the provision of research facilities and equipment, and costs associated with research programs. Capital expenditures are released on a quarterly basis. The low preference for R&D in the capital budget probably reflects the negative attitude of the Budget Office about the time lag between investing in research programs and reaping their results; the low level of adoption or commercialization of research results, the belief that there are alternative sources of funding for R&D, such as development banks and bilateral donors, among other rationales that indicate an implicit bias against the national agricultural research institutes.

The Impact of Competitive Funding

The higher approved allocation of funding to agricultural research in 2008 probably reflects the establishment of the Agricultural Research Council of Nigeria, which began in 2007. The Council's input increased the priority of agricultural research 2008. For example, N6 billion was allocated from a special intervention fund for agriculture for the purpose of implementing a Competitive Agricultural Research Grant Scheme, although only N1 billion was eventually disbursed for the purpose. Ultimately, the scheme represented a one-time allocation to the institutes that year.

Statutory and Donor Funding

During the period under review, the allocation of government funding for R&D increased, but was accompanied by high funding instability, low inflows of donor funding, and insignificant internally generated revenues. The World Bank loan–financed National Agricultural Research Project (NARP), which was completed in 1999, focused on strengthening research management, research infrastructure, and extension at the institutes. While NARP was in progress, the national government provided funding to the institutes through statutory allocations for research, training, and extension, and this funding continued in

small amounts after NARP ended. The low commitment to agricultural R&D persisted until the Agricultural Research Council of Nigeria was established in 2007; between 2000 and 2004, for example, some institutes received no allocations at all.

The high instability of national government funding to the institutes during 2001–10 correlates with a period of instability at the Federal Ministry of Agriculture and Rural Development, during which time there were numerous significant changes in both management and policy. In addition, the completion of NARP caused a drastic drop in overall funding to the institutes, accompanied by pronounced volatility in terms of budget levels, fiscal discipline, and the disbursement of appropriated funds.

Discrepancies and Delays in the Budget Process

The habitual late submission of budget proposals to the National Assembly causes both funding approvals and disbursements to be late as well, and often leads to conflicts in the budget process. The impact of the delays varies across agencies. Delays have significant impact on the conduct of research, especially in terms of time-sensitive activities, such as seasonal farm operations. On another level, the expectation of late disbursement of funding can cause service providers (understandably) to resort to overpricing to account for inflation and interest. Poor revenue projections and insufficient accrual of funds can affect disbursement and cause approved amounts to be cut by as much as 40 percent, as was the case in 2010. Of course a natural consequence of delayed funding disbursement is the challenge it presents to the recipient institutes in terms of completing planned activities and spending their full budgets. Planned activities spill over into the next year as a matter of necessity. Delays in the budget process regularly cause fourth quarter disbursements to occur as late as the end of December necessitating an extension until March of the following year.

Finally, projections submitted by the ministries, departments, and agencies are supposed to reflect the medium-term sector strategy; unfortunately, due to the disconnect between planning and budgeting, this is rarely the case. Projected budgets often reflect the expectation of cuts by higher authorities (that is, the Ministry, the Budget Office, and the National Assembly). By and large, the allocations finally approved are usually a function of the Minister's priorities, based in part on lobby groups and personal relationships. Eventual disbursement is a function of the level of revenues actually available. In 2010, for example, there was serious deficit in revenues due to the global financial crisis, such that disbursed funding to the institutes was cut by up to 40 percent.

Another complicating factor is that monitoring and evaluation activities should be conducted prior to the quarterly disbursement of funds, but overlapping delays make this entirely impractical from an operational perspective. The lack of a culture to support monitoring and evaluation further compounds this challenge. Given a dearth of qualified specialists, monitoring and evaluation is often reduced to mere field visits. As a result, the budget process is less transparent than desired and fraught by mismanagement.

4. CONCLUDING COMMENTS

Revelations of low allocations, high instability of statutory allocations, and the uncertainty of intervention funds through competitive grants or donor assistance are indicative of lack of emphasis on R&D in the national budget. The situation is reinforced by a budget process characterized by pronounced delays and discrepancies between planned and disbursed funding allocations in both capital and recurrent budgets. Appropriate policies are urgently required to redress this situation, particularly to normalize the budget process in favor of agricultural R&D, including instruments to decouple the dual agricultural/nonagricultural structure of the economy. Restructuring the agricultural budget in favor of R&D and instituting mechanisms to ensure strict adherence to due process in preparing government agricultural R&D budgets, are critical contributors to the federal government's current effort to enhance the performance of the research institutes with a view to increasing agricultural productivity and improving the market efficiency of enterprises in agricultural value chains.

REFERENCES

Ayoola G. B. 1997. *Towards a Theory of Food and Agriculture Policy Intervention for a Developing Economy with Particular Reference to Nigeria*. Working Paper 97-WP 187. Ames: Centre for Agricultural and Rural Development, Iowa State University.

Ayoola, G. B., and V. U. Oboh. 1999. A Model of Public Expenditure to Reveal the Preference for Agriculture in the Budget. *Journal of Rural Economics and Development* 14 (1): 1990–2000.

Bankole, O., and A. S. Olomola. 2006. *Towards the Effectiveness of the Budget Process in Nigeria*. Ibadan: Nigerian Institute of Social and Economic Research.

Budget Office of the Federation. 2010. Federal Government of Nigeria 2011 Budget Preparation and Submission Call Circular. BD/2000/Exp/362/5. Abuja, Nigeria.

Fei, J., and G. Ranis, 1969. Agriculture in the Open Economy. In *The Role of Agriculture in Economic Development*, E. Thorbecke, ed. New York: Columbia University Press.

Flaherty, K., G. Ayoola, J. Ogbodo, and N. Beintema. 2010. *Nigeria: Recent Developments in Agricultural Research.* Country Note. Washington, DC: International Food Policy Research Institute, Agricultural Research Council of Nigeria, and Farm and Infrastructure Foundation.

Lewis, W. A. 1955. *The Theory of Economic Growth*. London: Allen and Unwin.

Okogu, B. 2011. Budget Process, Implementation and Challenges. Presentation at the Public Service Institute of Nigeria, June 16.

Thorbecke, E., and A. Field. 1969. Relationship between Agriculture, Non-agriculture and Foreign Trade in the Development of Argentina and Peru. In *The Role of Agriculture in Economic Development*, E. Thorbecke, ed. New York: Columbia University Press.

World Bank. 1998. *Public Expenditure Management Handbook*. Washington, DC.

The Agricultural Science and Technology Indicators (ASTI) initiative compiles, analyzes, and publishes data on levels and trends in agricultural R&D investments, capacities, and institutional arrangements in developing countries. ASTI is managed by the International Food Policy Research Institute (IFPRI) and involves collaborative alliances with many national and regional R&D agencies.

Jointly convened by ASTI/IFPRI and the Forum for Agricultural Research in Africa (FARA), the conference, "Agricultural R&D -- Investing in Africa's Future: Analyzing Trends, Challenges, and Opportunities," brought together experts and stakeholders from the region to contribute their expertise for the purpose of distilling new insights and creating synergies to expand the current knowledge base. The themes under focus were (1) Why African governments under invest in agricultural R&D; (2) How human resource capacity in agricultural R&D can be developed and sustained; (3) How institutional structures can be aligned and rationalized to support agricultural R&D; and (4) How the effectiveness of agricultural R&D systems can be measured and improved.

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