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Political Economy of Fertilizer Policy in Nigeria

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Introduction

Nigeria's experience with fertilizer subsidy programs has been different than other countries in SSA. Nigeria is one of the only African countries capable of producing fertilizer domestically. But Nigeria is also large and densely populated. This makes national agricultural policy difficult due to logistical problems with implementation and the unique fertilizer needs of the various agro-ecological zones.

This brief will discuss the effects of Nigeria's input subsidy programs on maize production and fertilizer consumption. It will focus from 2000 to 2007 but include a discussion of Nigeria's subsidy history from the early 1970s to the present. Researchers have had difficulty studying Nigeria's subsidy schemes due to a lack of data. In spite of decades of authoritarian, centralized leadership, Nigeria's states have significant power to implement their own subsidies. This complicates any evaluation of a program's effectiveness, in part due to the variety of subsidies at any given time, as well as inconsistent accounting practices.

Background on Nigeria

Nigeria is the most populous country in Africa. It also has the second largest economy (after South Africa) and is the largest crude oil producer in Africa. Nigeria is a diverse country with over 350 different ethnic groups living in various agro-ecological zones, each with their own dietary characteristics and food preferences. This places considerable pressure on Nigeria's agricultural system to produce a wide variety of local crops rather than a single variety for domestic markets.[1] With the adoption of improved varieties of maize there is a corresponding increase in the adoption of fertilizer.

Table 1. Nigeria at a Glance

Population (2007)	148 million
Percentage of population in rural areas	53 (72.7 million)
Percentage of Rural Population below poverty line (2004)	64
Total Surface Area (thousands of sq km) (2007)	923.8
Agricultural land (percent of total area) (2005)	81.2
Hectares per capita (2005)[5]	0.9
Important crops	Cassava, rice, and maize
Percentage of fertilizer used by crop (1996)[6]	Maize - 24 Rice - 11 Yam – 12

Source: World Development Report, 2008

Inorganic fertilizers were not widely used in Nigeria until the adoption of improved maize.[2]

Approximately 53 percent of Nigerians live in rural areas, and of these approximately 64 percent live below the poverty line (see Table 1).[3] Agriculture remains the principal source of food and livelihoods for the majority of Nigerians, employing 75 percent of Nigeria's work force.[4] Thus, agriculture is extremely important to Nigeria's rural poor.

Following independence in 1960, Nigeria has experienced civil war and frequent military coups. Although there have been brief returns to democratic rule, the military has often inserted itself when perceived corruption or political unrest grow. In 1999, Nigeria again elected a civilian government. There has been a significant amount of corruption in Nigeria by both the military and democratic leaders. Nigeria's political instability made implementing consistent agricultural policy difficult.

Instead of using its vast oil resources to produce synthetic fertilizer, the Nigerian government has focused primarily on producing petroleum products for export. In the past, the government of Nigeria attempted domestic fertilizer production, but that ultimately proved inefficient and unsustainable.

In Sub-Saharan Africa (SSA), four countries – Zimbabwe, Ethiopia, Nigeria, and Kenya - account for three-fifths of all the fertilizer used in Africa.[7] Although Nigeria is one of the largest agricultural producers in SSA, it still falls far below its full potential because of low fertilizer application rates.[8]

Nigeria's fertilizer application rates are among the lowest on the continent.[9] From 1996-2002, Nigeria had a mean fertilizer use intensity of only 5.6 kg per hectare. Malawi and Kenya had much higher fertilizer rates of (30.8 kg/ha) and (31.8 kg/ha), respectively.[10] The three most important crops in Nigeria are cassava, rice, and maize. Of these, maize is the most input intensive, drawing large amounts of nutrients from the soil. In 1996, maize consumed 24 percent of fertilizer used in Nigeria, the most of any crop.[11]

Nigerian policymakers have described the role of agriculture as consisting of five main functions: (1) provide for Nigeria's rising population, (2) provide raw materials upon which to build industry, (3) generate employment, (4) generate income for farm workers and others involved in the postharvest process, and (5) generate foreign exchange earnings.[12]

The Federal Government of Nigeria (FGN) has attempted many types of subsidy programs dating back to the 1950s.[13] The majority of programs were implemented quickly and proved to be short-lived. Because the FGN has been so inconsistent with its fertilizer subsidies, the country has had difficulties developing a private agricultural input sector.

Nigerian Subsidy Programs

1970s – The growth of the fertilizer industry and oil shocks

In 1972, the government of Nigeria introduced the National Accelerated Food Production Programme (NAFPP), a technology-based program designed to make inputs available to all farmers.[14] In the early 1970s, state governments in Nigeria privately procured fertilizer through sales agents and extension networks. Individual states subsidized fertilizer at approximately 95 percent of its market price, but prices were different in each state. This caused significant losses because of interstate arbitrage.[15] Because agricultural issues were not high on the agenda for Nigeria's central government, states had great flexibility in their handling of agricultural policy.

Founded in 1976, the FGN's Fertilizer Procurement Distribution Division (FPDD) aimed to centralize fertilizer procurement by the federal government and implement a uniform subsidy of roughly 75 percent.[16] In reality, the subsidy was closer to 80-85 percent, at a cost of $150 million USD.[17]

Largely because of oil shocks in the late 1970s, Nigeria experienced overall macroeconomic instability. In response to the rise in oil prices, its government began investing in the country's refining capacity. Nigeria is one of the few African countries capable of producing its own fertilizer domestically because of its large supply of oil.[18] This transition to an oil-centric economy devastated Nigeria's agricultural sector. From 1973-1979, total agricultural output declined by 14 percent as less government aid went toward agriculture and the rural labor force declined.[19]

During this time, the government-owned Federal Superphosphate Fertilizer Company Ltd. (FSFC) began operating online with a production capacity of 100,000 tons of phosphate fertilizer.[20] The FPDD procured fertilizer from international markets as well as the FSFC. The FGN paid for distribution and transportation of the fertilizer to depots throughout the states. The state would then take over operations and distribute fertilizer through extension centers in a depot system.[21] This distribution process to the depots was ineffective and led to significant storage and transportation losses owing to mismanagement.

1980s – ADPs and Structural Adjustment

The FGN's most effective programs during the 1970s and 1980s were the Agricultural Development Programs (ADPs). Financed through a World Bank loan, these projects were technology-based and successful in raising productivity through constructing roads and building extension offices in remote places.[22] Much of this program faded away in the late 1980s as Nigeria adopted the Structural Adjustment Program in 1986.[23] Subsidies were reduced to 28 percent, but later increased to 80

percent. This liberalization project significantly effected smallholder farmers who relied on input subsidies, which were subsequently removed. Farmers then faced input price increases of 300 percent.[24]

By 1987, individual states were tasked with transporting fertilizer, and the FGN reimbursed the state governments. In 1988, the National Fertilizer Company of Nigeria (NAFCON) debuted online, further increasing Nigeria's domestic production capacity.[1] Although Nigeria's industrial fertilizer capacity grew to be quite large, it consistently under-produced.[25] Then, in 1990, the government abandoned structural adjustment programs and restored the fertilizer subsidies.[26] The 1980s witnessed huge fluctuations for Nigerian farmers in the price of inputs, causing further instability.

1990s – Reform and government re-involvement

Between 1992-1994, the FGN abandoned the depot system, and tasked the FPDD with distributing imported fertilizer while NAFCON became distributor of domestic fertilizer. By the mid 1990s, the FGN stopped importing all fertilizer, and allowed the private sector to take over fertilizer imports.

Throughout the early 1990s, numerous reports came out regarding abuses of Nigeria's fertilizer subsidy programs. While the stated goal of the program was to improve under producing smallholder farmers, targeting proved difficult and was never able to be accomplished effectively. Rather, fertilizer ended up in the hands of many of Nigeria's elites who smuggled it to neighboring countries where the market price of fertilizer was higher, or resold to smallholder farmers for profit.[27, 28]

The FGN's input subsidy efforts during the early 1970s to the early 1990s were characterized by significant state involvement in all aspects of the distribution system. The FGN became producer, procurer, and distributor of fertilizer. Input policies fluctuated significantly with large swings in the subsidy rates.

In 1994, new policy measures were implemented by the FGN in order to repair damage done by the structural adjustment program. Notably, fertilizer procurement and distribution were to be handled solely by local governments.[29] Faced with unsustainably high fiscal costs, beginning in 1997, the FGN decided to completely liberalize the fertilizer industry.[30] The government abolished subsidies and reduced tariffs to 5 percent. This transition by the government was unsuccessful since the private sector was not adequately prepared to take over. This led to a significant decline in fertilizer use and crop yields and the government reinstituted a 50 percent subsidy.[31] In 1999, Nigeria had elected its first civilian government in almost 40 years. In May 1999, the FGN reduced its fertilizer subsidy to 25 percent (it was returned to 50 percent shortly thereafter), and procured over 100,000 tons of fertilizer to be distributed to the states.[32] The cost of this subsidy was borne by both the federal government and the states.

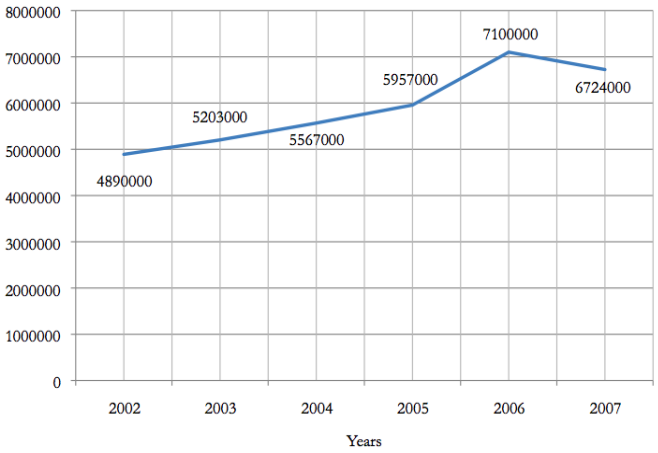


Figure 1. Maize Production in Nigeria 2002-2007 (mT)
Source: FAOSTAT, 2008

According to Mogues et al. (2008), in 1999, fertilizer purchased by the federal government was transferred to the states at a 25 percent subsidy, with the price charged to the states calculated as the import parity price less the 25 percent subsidy. The cost to the states was deducted directly from the states' Federation Account allocations. States were then able to apply additional subsidies. At the local level, local government allocation committees distributed the fertilizer to wards, and at the ward level, the ward committee distributed it to farmers.[33]

In May 2000, the FGN abolished fertilizer subsidies six months after it instituted them.[34] Since states are able to

[1] NAFCON was abandoned in 2001, but was rehabilitated and brought back online in 2008 by a private chemical company, Notore.

apply their own subsidy in addition to the federal one, fertilizer prices vary significantly. This has led to continuing interstate arbitrage of fertilizer and has placed a heavy burden on state budgets.[35] Although the federal government had halted subsidies, agriculture dependent states continued to subsidize fertilizer.

2000s

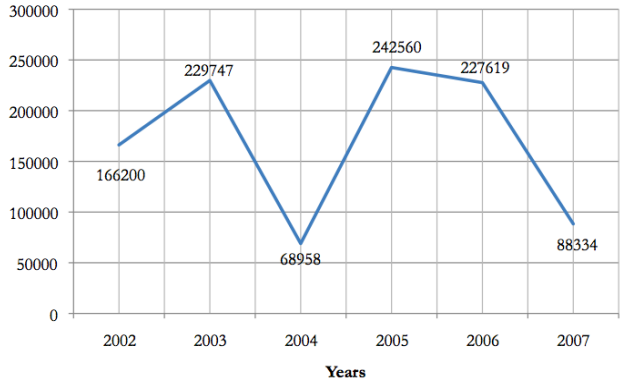
In 2004, the Nigerian government implemented the National Economic Empowerment and Development Strategy (NEEDS). NEEDS acknowledged that agricultural productivity and food security were critical to long-term stability and diversification of the economy.[36] This strategy called for both a review of Nigeria's input supply delivery system, and the development of an effective private input sector.[37]

In 2004, the International Center for Soil Fertility and Agricultural Development (IFDC) implemented the Developing Agricultural Inputs Markets in Nigeria program (DAIMINA). This program piloted the use of vouchers in three Nigerian states[38], and occurred at the same time as the National Special Program for Food Security (NSFPS), another "smart" fertilizer subsidy program. These programs' objectives were to target smallholder farmers for subsidized fertilizer inputs using private dealers, but work with the existing government distribution system. This project provided a test of the government's ability to employ vouchers within an existing national subsidy scheme.[39] The NSFPS operates in every Nigerian state, and within each state are three farmer groups that receive subsidized fertilizer and are provided extension services. This program is supervised by the FAO, and implemented by the FGN.[40]

Since 2002, Nigeria has enjoyed steadily increasing yields in the production of maize. The country reached a high of 7.1 million metric tons of maize in 2006 (see Figure 1). This steady rise in maize production has less to do with increased use of fertilizer inputs than with expanding crop areas. Due most likely to the changing nature of Nigeria's fertilizer policies, fertilizer consumption in Nigeria has been dynamic.

The quantity of fertilizers employed within Nigeria has been inconsistent. Reaching a low of roughly 69,000 nutrient tons in 2004, but then the following year achieving a high of roughly 243,000 nutrient tons.

Figure 2. Total NPK Consumed in Nigeria 2002-2007 (nutrient tons)



Source: FAOSTAT, 2008

As maize production rose between 2003-2005, fertilizer use rose and fell sharply. This data underscores that most of the yields have come primarily due to expanding farmland.[41]

Challenges

Consistently, the biggest challenge researchers have faced when evaluating these subsidy programs is determining the cost. It is clear that agricultural spending consumes a large percentage of Nigeria's federal agricultural budget, with approximately 42 percent going to fertilizer subsidies.[42] However, owing to inconsistent and non-transparent accounting practices and the addition of state level interventions, it is difficult to calculate any subsidy program's real cost. State level crop yields are also difficult to ascertain making evaluation difficult. National crop production is available, but drawing connections between national production and the national subsidy is difficult due to state level interventions. This hinders evaluation efforts.

Conclusion

The Nigerian government continues to work on state-led interventions to improve agricultural productivity. According to Akande et al. (2005), state interventions have been less effective due to a number of reasons, such as (1) the Nigerian state's failure to take the first necessary steps in agricultural modernization, (2) the

military dictatorship's focus on the oil sector rather than agriculture, (3) the military's failure to define a proper role for the state in the agrarian structure, and (4) corruption.[43] Nigeria's attempt at a "Green Revolution" has been neither market-oriented nor based on increasing smallholder productivity, but rather dictated frequently by the current political situation.

Please direct questions or comments about this research to the Evans Policy Applied Research (EPAR) PI, Leigh Anderson, at eparx@u.washington.edu.

Endnotes

[1] Akande, T. (2005). The State and the Nigerian Green Revolution. *The African Food Crisis: Lessons from the Asian Green Revolution*, 162.
[2] Smith, J. et al. (1994). The Role of Technology in Agricultural Intensification: The Evolution of Maize Production in the Northern Guinea Savanna of Nigeria. *Economic Development and Cultural Change, 42*(3), 547.
[3] Mogues, T. et al. (2008). Agricultural Public Spending in Nigeria. IFPRI Discussion Paper No. 789, 9.
[4] Phillip, D. et al. (2008). Constraints to Increasing Agricultural Productivity in Nigeria. Nigeria Strategy Support Program. IFPRI Brief No. 4, 1.
[5] The World Development Report 2008: Agriculture for Development
[6] Kherallah et al. (2002). Reforming Agricultural Markets in Africa. International Food and Policy Research Institute, 35.
[7] Kherallah et al. (2002). Reforming Agricultural Markets in Africa. International Food and Policy Research Institute, 29.
[8] Mogues, T. et al. (2008). Agricultural Public Spending in Nigeria. IFPRI Discussion Paper No. 789, 9.
[9] Kherallah et al. (2002). Reforming Agricultural Markets in Africa. International Food and Policy Research Institute, 29.
[10] Morris, M. et al. (2007). Fertilizer Use in African Agriculture: Lessons Learned and Good Practice Guidelines. Washington: World Bank, 23.
[11] Kherallah et al. (2002). Reforming Agricultural Markets in Africa. International Food and Policy Research Institute, 35.
[12] Akande, T. (2005). The State and the Nigerian Green Revolution. *The African Food Crisis: Lessons from the Asian Green Revolution*, 164.
[13] Smith, J et al. (1994). The Role of Technology in Agricultural Intensification: The Evolution of Maize Production in the Northern Guinea Savanna of Nigeria. *Economic Development and Cultural Change*, *42*(3), 537-554.
[14] Akande, T. (2005). The State and the Nigerian Green Revolution. *The African Food Crisis: Lessons from the Asian Green Revolution*, 169.
[15] Nagy, J.G., & Edun, O. (2002). Assessment of Nigerian Government Fertilizer Policy and Suggested Alternative Market-Friendly Policies. IFDC: Confidential Draft, 9.
[16] Nagy, J.G., & Edun, O. (2002). Assessment of Nigerian Government Fertilizer Policy and Suggested Alternative Market-Friendly Policies. IFDC: Confidential Draft, 10.
[17] Kherallah et al. (2002). Reforming Agricultural Markets in Africa. International Food and Policy Research Institute, 45.
[18] Mogues, T. et al. (2008). Agricultural Public Spending in Nigeria. IFPRI Discussion Paper No. 789, 46.
[19] Mogues, T. et al. (2008). Agricultural Public Spending in Nigeria. IFPRI Discussion Paper No. 789, 7.
[20] Nagy, J.G., & Edun, O. (2002). Assessment of Nigerian Government Fertilizer Policy and Suggested Alternative Market-Friendly Policies. IFDC: Confidential Draft, 10.
[21] Nagy, J.G., & Edun, O. (2002). Assessment of Nigerian Government Fertilizer Policy and Suggested Alternative Market-Friendly Policies. IFDC: Confidential Draft, 10.
[22] Akande, T. (2005). The State and the Nigerian Green Revolution. *The African Food Crisis: Lessons from the Asian Green Revolution*, 171.
[23] Akande, T. (2005). The State and the Nigerian Green Revolution. *The African Food Crisis: Lessons from the Asian Green Revolution*, 171.
[24] Akande, T. (2005). The State and the Nigerian Green Revolution. *The African Food Crisis: Lessons from the Asian Green Revolution*, 171.
[25] Mogues, T. et al. (2008). Agricultural Public Spending in Nigeria. IFPRI Discussion Paper No. 789, 47.
[26] Kherallah et al. (2002). Reforming Agricultural Markets in Africa. International Food and Policy Research Institute, 45.
[27] Mogues, T. et al. (2008). Agricultural Public Spending in Nigeria. IFPRI Discussion Paper No. 789, 47.
[28] Akande, T. (2005). The State and the Nigerian Green Revolution. *The African Food Crisis: Lessons from the Asian Green Revolution*, 170.
[29] Akande, T. (2005). The State and the Nigerian Green Revolution. *The African Food Crisis: Lessons from the Asian Green Revolution*, 172.
[30] Mogues, T. et al. (2008). Agricultural Public Spending in Nigeria. IFPRI Discussion Paper No. 789, 47.
[31] Akande, T. (2005). The State and the Nigerian Green Revolution. *The African Food Crisis: Lessons from the Asian Green Revolution*, 173.
[32] Nagy, J.G., & Edun, O. (2002). Assessment of Nigerian Government Fertilizer Policy and Suggested Alternative Market-Friendly Policies. IFDC: Confidential Draft, 11.
[33] Mogues, T. et al. (2008). Agricultural Public Spending in Nigeria. IFPRI Discussion Paper No. 789, 48.
[34] Bumb, B.L. et al. (2006). Input Subsidies and Agricultural Development: Issues and Options for Developing and Transitional Economies. IFDC Background Paper, Abuja, Nigeria, 18.
[35] Mogues, T. et al. (2008). Agricultural Public Spending in Nigeria. IFPRI Discussion Paper No. 789, 48.
[36] Mogues, T. et al. (2008). Agricultural Public Spending in Nigeria. IFPRI Discussion Paper No. 789, 1.
[37] National Planning Commission. (2004). Meeting everyone's needs—National Economic Empowerment and Development Strategy. Abuja, Nigeria as cited in Mogues et al. (2008)
[38] Gregory, I. (2006). The Role of Input Vouchers in Pro-Poor Growth. Background Paper for the African Fertilizer Summit. Abuja, Nigeria.
[39] Dorward, A. (2008). Rethinking Agricultural Input Subsidy Programmes in a Changing World. SOAS: University of London.
[40] Gregory, I. (2006). The Role of Input Vouchers in Pro-Poor Growth. Background Paper for the African Fertilizer Summit. Abuja, Nigeria, 9.
[41] Phillip, D. et al. (2008). Constraints to Increasing Agricultural Productivity in Nigeria. Nigeria Strategy Support Program. IFPRI Brief No. 4, 1.
[42] Mogues, T. et al. (2008). Agricultural Public Spending in Nigeria. IFPRI Discussion Paper No. 789, 49.
[43] Akande, T. (2005). The State and the Nigerian Green Revolution. *The African Food Crisis: Lessons from the Asian Green Revolution*, 175.