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Political Economy of Fertilizer Policy in Ghana

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Introduction

Agriculture is the most important sector in the Ghanaian economy. In 2008, it accounted for over 32 percent of GDP[1] and employed over half of the labor force.[2] Economic development in Ghana has historically been dependent on the success of agriculture, particularly the main export crop – cocoa. Despite the sector's importance, Ghanaian farmers have one of the lowest fertilizer application rates in SSA.

Following independence in 1957, the government of Ghana (GoG) used agricultural export earnings to fund large infrastructure projects and invest in public services, such as education and health.[3] The combination of a dominant agricultural sector, nutrient poor soils, low fertilizer use among smallholder farmers, and the absence of locally produced inorganic fertilizers has prompted the GoG to intervene in the fertilizer market. Although government strategies and approaches have significantly changed over the past 50 years, the GoG remains involved in the domestic fertilizer market.

Agriculture in Ghana

Ghana's major export crops are cocoa, oil palm, and cotton. Prominent staple crops are maize, cassava, rice and yams.[4] Smallholder farmers produce approximately 80 percent of export and staple crops on plots that average less than 1.2 hectares.[5] Rain-fed agriculture is the dominant form of production, which has posed a significant constraint to expanding production.[6,7]

Table 1. Ghana at a Glance

Population (2003-2005)	23.4 million
Percentage of rural individuals below poverty line (2006)	39
Total Surface Area (sq km)	238,540
Hectares per capita (2005)	
Important crops	Cocoa, oil palm, maize, cassava, cocoyam
Kgs of nutrients used per ha of arable and permanent crop land (2000-2002)	8
Net cereal imports (2003-2005)	$162 million USD

Data Source: World Development Report Indicators (2008) and World Bank WDI database, accessed October 26, 2009.

Ghana's climate ranges from hot and humid lowlands in the southwest to relatively cool highlands in the central plateau and hot and arid plains in the north.[8] Overall, this diverse climate is ideal for growing a large variety of cereals, root crops, legumes, vegetables, and tree crops. The northern part of the country only has one rainy season from May to September, whereas southern areas have two rainy seasons, from March to July and August to November.[9]

Export Crops

Ghana's main export crop is cocoa. Ghana is currently the second largest cocoa exporter in the world. As of 2007, cocoa accounted for 28 percent of the total land area under cultivation[10] and about half of all agricultural exports.[11]

Smallholder farmers account for most cocoa production, although some industrial production exists. Approximately 700,000 smallholder farms, averaging 1.2 hectares in size, produce the bulk of cocoa.[12] Production is concentrated in the semi-deciduous rainforests of western and central Ghana where soil quality and climate provide optimal growing conditions.[13] Other important export crops are cotton and oil palm.[14]

Overall, current fertilizer application rates are below optimal levels. Nutrients added to the soil are unable completely replace the nutrients extracted, leading to poor soil quality.[15] Fertilizers are typically used for higher value export crops; however, fertilizer is also frequently applied to staple food crops such as rice and maize.[16]

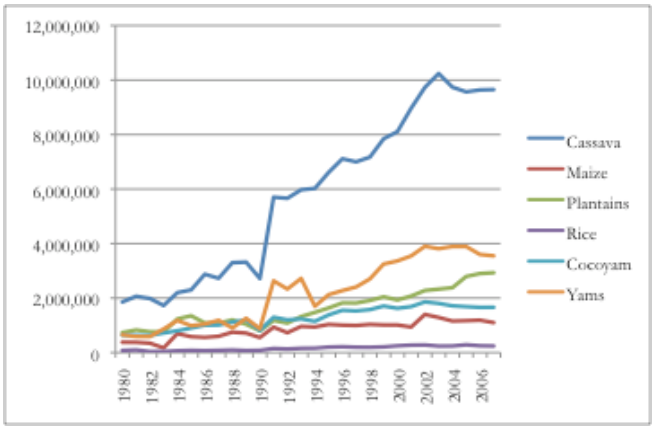
Most smallholder cocoa farmers do not currently apply fertilizers to their crops. Application to oil palm and cotton are more common. Variable commodity prices and perceived agricultural risk have limited demand for fertilizer among cocoa farmers.[17] In addition, low producer prices for cocoa have discouraged fertilizer use.[18] Supply side constraints, such as information asymmetry between suppliers and smallholder farmers, a lack of financing, and poor infrastructure have also diminished aggregate supply in the market.[19] By increasing fertilizer use and adopting intensive farming techniques, estimates suggest that smallholder farmers could increase export crop outputs substantially. Cocoa farmers, for instance, could boost production from the current average of 300 kg/ha to 1.0 to 1.5 tons/ha.[20]

Major Food Crops

As a result of the diverse climate, Ghana is able to produce a wide variety of staple foods. Smallholder farmers produce several major staple crops, including maize, cassava, rice, plantains, cocoyam and yams.[21] These crops are consumed by the majority of the population and are grown by most rural households.[22] Figure 1 illustrates that cassava is the dominant food crop with production reaching nearly 10 million tons in 2007.

Recent data on fertilizer use for non-export crops are lacking. However, maize has historically accounted for over 40 percent of fertilizer use among staple foods.[23] Rice accounted for approximately 10 percent of total fertilizer use.[24] While fertilizer may be applied to cassava, plantain, cocoyam, and yams, application rates remain low.[25]

Figure 1: Total Production of Major Food Crops in Ghana (tons)



Data Source: FAOSTAT, accessed October 29, 2009

History of the Fertilizer Market

Since 1957, the GoG has played an integral role in the agricultural sector: increasing domestic food production, supplying key inputs to various crop sectors, and maintaining overall food security.[26] Due to the poor quality of Ghana's soil and the lack of a domestic fertilizer supply, the promotion, procurement and distribution of fertilizer has been an important part of achieving those goals.

Pre-Reform Fertilizer Policies, 1957-1982

Following independence, the GoG, primarily through the Ministry of Food and Agriculture (MoFA), chose to intervene directly in the domestic fertilizer market through price controls, subsidies, agricultural loans, and agricultural extension services.[27] In the 1960s, the GoG became the sole domestic importer, marketer, and distributer of inorganic fertilizers. Fertilizer was distributed to smallholder farmers via MoFA regional offices and state-owned agricultural companies.[28]

The MoFA offered a single price for fertilizer throughout Ghana. Farmers were assured the same retail price regardless of location. This progressive policy offered greater relative support for farmers in northern Ghana, where poverty rates were higher.[29]

In the 1960s and 1970s, Ghana was the global leader in cocoa production.[30] The Ghana Cocoa Board (COCOBOD) controlled marketing, procurement from smallholder farmers and sales to domestic and foreign processors.[31] They also set the fixed price paid to producers on an annual basis.

By the mid 1970s, however, rising oil prices increased fertilizer prices. During this period, the MoFA maintained domestic retail prices by increasing the direct fertilizer subsidy from approximately 40 percent to 86 percent of the market price.[32] The GoG also maintained price floors for rice and maize and overvalued the Ghanaian currency, making all imports (including fertilizer) less expensive. By 1983, the World Bank estimated that the Ghanaian currency was overvalued by over 100 percent.[33]

In the late 1970s, the cocoa industry experienced a precipitous decline. Several factors contributed to the fall in cocoa production. The most important was a relative decline in producer prices.[34] The decline in cocoa production not only affected smallholder farmers, but also added significant pressure onto the national budget as government revenues from cocoa exports fell.

Figure 2. Fertilizer Policy Timeline

Year	Event
1960s	The Ministry of Food and Agriculture (MoFA) asserts control over fertilizer market.
1970s	The MoFA increases fertilizer subsidies in light of a spike in global oil prices to minimize impact to the agricultural sector.
1980	Direct government (input or price?) subsidies to farmers made-up 3.5% of the national agricultural budget.
1981-1982	Macroeconomic instability caused inflation to reach over 100% and the currency to become overvalued.
1983	Deteriorating macroeconomic conditions caused the GoG to initiate the first structural adjustment program.
1984-1991	Direct fertilizer subsidies to farmers were phased out and the fertilizer market was liberalized.

Data Source: Kherallah, Delgado, Gabre-Madhin, Minot, & Johnson, 2002

Between 1977 and 1983 inflation averaged 79 percent (spiking to 116 percent and 117 percent in 1977 and 1981, respectively).[35] During that same period, government revenues fell from 15 percent to 6 percent of GDP, export earnings declined to 7 percent and real wages in the public sector fell by 10 percent.[36] Government expenditures supporting the agricultural sector through direct fertilizer subsidies were no longer sustainable.[37]

Reform Policies, 1983-1993

The GoG, with assistance from the IMF and World Bank, embarked on a Structural Adjustment Program (SAP) in 1983.[38] The national tax structure, agricultural subsidies, government expenditures, and trade regulations were all reassessed to create a more liberalized, competitive economy.[39] Ghana's currency was devalued by 84.7 percent,[40] government spending was brought under control, and direct fertilizer subsidies were reduced and eventually phased out in 1991.[41] From 1989 through 1991, the retail, wholesale and import components of the fertilizer sector were all liberalized. By the early 1990s, the MoFA and state-run enterprises were no longer directly involved in the domestic fertilizer market.[42]

Devaluation and the removal of subsidies had a significant impact on fertilizer demand in Ghana. Fertilizer prices rose sharply between the pre-reform and post-reform periods. The relative price of nitrogen fertilizer used in maize production increased by 364 percent from 1982-87 to 1991-94.[43] Total annual fertilizer consumption dropped from 20,000 tons to 12,000 tons over that same period, one of the largest relative declines in fertilizer use in SSA.[44]

Post-Reform Policies, 1994-Present

By 1994, the economy had recovered and the currency stabilized. Global commodity prices (particularly for cocoa) and the producer share of the export price also increased. As a result fertilizer consumption returned to pre-reform levels.[45] As of 2008, total fertilizer consumption increased to an average of 8 kg/ha of arable and permanent cropland.[46]

Over the past few years, cocoa and staple food output has increased due to higher producer prices, better disease and pest management, and improved infrastructure.[47] Even though cocoa production has grown substantially since 1970, studies indicate that fertilizer application rates are still below optimal levels.

Today, the GoG continues to promote the adoption and use of fertilizer by addressing some of the barriers facing smallholder farmers. The GoG, through the MoFA, has provided smallholder farmer associations with loans to purchase agricultural inputs, extension services, and has designed marketing campaigns to increase awareness about fertilizer use among smallholder farmers.[48] This has become even more important due to the rise in global food prices in 2006/07.

To counter rising input and food prices, the GoG temporarily introduced a direct fertilizer subsidy through a voucher program in July 2008.[49] Agricultural extension officers issued vouchers for 50kg bags of fertilizer. Farmers could then purchase fertilizer from any retailer. Retailers, in turn, submitted vouchers to private fertilizer companies for reimbursement by the MoFA.[50]

Initial analysis of the 2008 fertilizer voucher program indicated mixed results. As of mid-October 2008 less than half of the vouchers had been redeemed.[51] Furthermore, it appeared that the program was started too late in the year for farmers in southern Ghana to benefit.[52]

Structure of Ghana's Fertilizer Market

Currently, Ghana does not produce inorganic fertilizers domestically.[53] Recently phosphate rock deposits and oil reserves have been discovered which might support a domestic fertilizer industry in the future. The following private companies supply nearly 100 percent of the total fertilizer market:[54]

- Yara Ghana Ltd
- Wienco Ghana Ltd
- Golden Stork
- Dizengoff Ghana Ltd
- Chemico Ltd[1]

Nearly all fertilizer is imported in bulk through the Tema port, located 16 miles from Accra, Ghana's capital.[2] From the port, bulk fertilizer is bagged into 50 kg bags, blended with other nutrients, repackaged, labeled, and transported to various distribution centers in Tema (southern Ghana), Takoradi (southwestern Ghana), Kumasi (Central Ghana), and Tamale (northern Ghana). The majority of bulk fertilizer is sold to private retailers, who in turn sell their products to smaller retailers or directly to farmers.[55,56]

Fertilizer retailers fall into four categories based on their access to import supplies. They either have a contract with a single importer or multiple importers, have no contract with importers, or repackage fertilizer from larger retailers.

Credit is an integral part of the entire fertilizer market from importers down market to the farmers. Importers typically rely on three forms of credit: auto-financing, lines of credit from international suppliers, and loans from the domestic banking sector.[57] Interest rates paid by importers range from 20-30 percent for domestically procured loans, to 5-10 percent for loans provided by international financial institutions.[58] Larger retailers that have contracts with importers are often able to procure lines of credit directly from the importers.[59] The majority of smaller retailers pay cash for fertilizer, however, a limited number are extended credit by local banks or wholesalers.[60]

In the early 1970s, the GoG established a system of rural banks to provide loans to smallholder farmers at subsidized rates. Following the Structural Adjustment Programs in the 1980s, financing to smallholder farmer became virtually non-existent. Today, smallholder farmers primarily rely on self-financing or loans from friends or family.[61] The retail fertilizer price paid by farmers varied significantly based on the type of fertilizer, distance from the port, and overhead costs paid by wholesalers and retailer along the supply chain. While the FOB price was the same for each type of fertilizer in Tema (Southern Ghana), Kumasi (Central Ghana) and Tamale (Northern Ghana), transportation costs, taxes, finance costs, overhead, and retail margins

[1] Chemico Ltd is the only major importer, which is not a subsidiary of an international parent company.

[2] The limited capacity of the port has been cited as causing costly delays and for increasing the final price of the fertilizer by up to 5 percent (Banful, 2009)

varied. As a result, fertilizers were relatively more expensive in northern Ghana than in the southern or central regions. Thus, smallholder farmers in the poorest region of Ghana pay the highest fertilizer prices.[62]

Conclusion

Over the past 50 years the GoG has been a major actor in the inorganic fertilizer market. From exercising total control of the domestic supply chain in the 1960s and 1970s to more indirect interventions in later years, the GoG tried to encourage fertilizer use among smallholder farmers in order to boost agricultural production. In recent years, agricultural growth has averaged 5.5 percent as compared to 5.2 percent growth in the rest of the economy.[63] However, most of this growth was due to land expansion and favorable weather conditions rather than increased productivity.[64] Increased fertilizer use among smallholder farmers is a critical component for future agricultural growth and continued economic success.

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

Endnotes

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