

Neoliberal policy, rural livelihoods, and urban food security in West Africa: A comparative study of The Gambia, Côte d'Ivoire, and Mali

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This study examines the impact of two decades of neoliberal policy reform on food production and household livelihood security in three West African countries. The rice sectors in The Gambia, Côte d'Ivoire, and Mali are scrutinized as well as cotton and its relationship to sorghum production in Mali. Although market reforms were intended to improve food production, the net result was an increasing reliance on imported rice. The vulnerability of the urban populations in The Gambia and Côte d'Ivoire became especially clear during the 2007–2008 global food crisis when world prices for rice spiked. Urban Mali was spared the worst of this crisis because the country produces more of its own rice and the poorest consumers shifted from rice to sorghum, a grain whose production increased steeply as cotton production collapsed. The findings are based on household and market surveys as well as on an analysis of national level production data.

agricultural policy | food crisis | Green Revolution | livelihood security | rice

A variety of forces converged to drive a steady increase in global food prices between 2000 and 2008, with prices rising almost 50% between April 2007 and March 2008. Rising food prices are problematic for many, especially the urban poor, who spend a disproportionate amount of their income on foodstuffs. High food prices in 2007 and 2008 touched off food riots around the world, with urban West Africa arguably suffering more of these disturbances than any other world region (1).

West African cities have become ever more dependent on imported rice from Asia over the past three decades. Inexpensive Asian rice and declining tariff barriers facilitated West Africa's increase in rice imports. Several Southeast Asian nations became major rice exporters in the 1970s following the first Green Revolution and significant investments in irrigation infrastructure. These exporters, along with increasingly subsidized production by American farmers, flooded global markets with rice, leading to two decades of low and relatively stable rice prices (2). Concurrent with these changes in global rice production were a series of policy changes that opened up West African markets to increasing rice imports and undercut local production in many cases. These changes were part of a broader shift in the global policy environment toward neoliberal economics following the third world debt crisis of the late 1970s. The World Bank's "Berg Report" in 1981 stressed rolling back state involvement in development in African countries and giving wider responsibilities to the private sector (3). In West Africa, the resulting neoliberal economic policies sought to promote growth and prosperity through structural adjustment programs (SAPs) that generally involved contraction of government services, renewed export orientation on crops or goods deemed to have a comparative advantage, privatization of parastatal organizations, removal or reduction of many subsidies and tariffs, and currency devaluations.

The urban demand for rice grew throughout West Africa from the 1970s. In many cases, it represented a shift away from the consumption of coarse grains (millet, sorghum, and maize), cassava, yam, or plantain banana in response to urbanization as

consumers opted for milled rice because its preparation is labor-saving (1, 4). The region's increasing dependence on the global rice market for domestic cereal supplies means that imports now supply more than 40% of the demand for cereals in West Africa. The resulting increase in rice imports, however, left urban West Africa increasingly vulnerable to fluctuating global rice prices. Indeed, global rice prices increased more dramatically than those of other grains in 2007–2008, rising by 100% between February 2007 and March 2008.† Importing countries faced serious political and economic questions as some of their citizens saw their ability to purchase food collapse.

This paper examines three countries (The Gambia, Côte d'Ivoire, and Mali) selected because of the varying importance of rice in their national diets and different levels of dependency on imported rice (Table 1). The study takes a long-term view, seeking to understand the policies and programs enacted since the early 1960s that led to the acute food problems experienced in urban sectors of The Gambia and Côte d'Ivoire in 2007–2008. The paper then compares these two cases with that of Mali, where average food prices in the capital city, Bamako, were above the 5-year average in 2008, yet the situation never became as severe as in The Gambia or Côte d'Ivoire. More specifically, the study seeks to answer two questions:

- (i) What accounts for the shifting mix of imported vs. local grains consumed by urban dwellers in Banjul, Abidjan, and Bamako?
- (ii) Given international price trends, what are the implications of the current mix of domestic and imported food supplies for urban food security and rural livelihoods in The Gambia, Côte d'Ivoire, and Mali?

The paper's findings are related to ongoing policy debates about the form and necessity of a new Green Revolution for Africa. The rice sectors in The Gambia, Côte d'Ivoire, and Mali are scrutinized as well as cotton and its relationship to sorghum production in southern Mali.

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Table 1. Rice prices and consumption in The Gambia, Côte d'Ivoire, and Mali

Country	The Gambia	Côte d'Ivoire	Mali
2008 peak imported rice price, US dollars per kilogram (5)	\$0.84 (24 dalasi)	\$0.84 (370 CFA francs)	\$0.91 (400 CFA francs)
2007 per capita GNI, US dollars (6)	\$320	\$910	\$500
Rice consumption per capita (7)	89.7 kg	74.3 kg	48.7 kg
Rice imports as % consumption (8)	85%	60%	20%
2007 population, millions (6)	1.7	19.3	12.3

GNI, gross national income.

Results: The Gambia Case Study

The Gambia is a low-income West African country, where agriculture is practiced by two-thirds of its citizens. Peanuts are the primary export crop, with rice, millet, and sorghum traditionally planted for food. Over the second half of the 20th century, The Gambia grew increasingly dependent on rice as the nation's dietary staple, but the country's farmers proved unable to improve their market share of the burgeoning urban demand for rice. Their capacity was undermined by the implementation of economic reforms in the mid-1980s, which removed producer subsidies in favor of market-based solutions and inexpensive imports. As a consequence, domestic rice production stagnated and milled imports climbed. The 2007–2008 world food crisis laid bare The Gambia's vulnerability to global rice markets. In a nation where the per capita income hovers around US \$1 a day, the price of rice had doubled. As its purchase became increasingly unaffordable, the government intervened to stabilize the cost of the nation's dietary staple. This section examines the policy shifts of the final decades of the 20th century that adversely affected Gambian rice farmers. Rice policies of the postindependence era can be divided into two distinct periods: (i) 1966–1984, which emphasized the Gambian rice sector, followed by (ii) the current period, which favors rice imports.

1966–1984: Gambian Irrigated Rice Development. Between 1966 and 1984, international development assistance sponsored pump-irrigation rice projects on the Gambia River's abundant alluvial swamps. The objective was to modernize production of a prominent dietary staple with the introduction of Green Revolution Asian rice varieties. The projects aimed to shift rice from seasonal to year-round cultivation, thereby enabling two annual harvests instead of one. One harvest was to secure household subsistence requirements, whereas the second offered a cash crop to raise farm incomes. Double-cropping would strengthen rural food reserves and generate surpluses to meet urban demand.

Of the approximately 20,000 ha planted to rice in the mid-1960s, 4,000 ha were targeted for pump irrigation (9). Small-scale irrigation projects of limited duration and donor support were sponsored by the Taiwanese government (1966–1974), the World Bank (1973–1976), and mainland China (1975–1979). In 1984, the International Fund for Agricultural Development funded a large-scale rice scheme (Fig. 1). Each project provided growers with improved hybrid seeds, fertilizers, pesticides, and water deliveries at subsidized rates (10). Gambian rice production grew from 20,400 tons in 1966 to 32,000 tons by 1971. It waned during project intervals in the 1970s but recovered to 1971 levels by 1981.

However, irrigation, as planners consistently failed to consider, involves more than the introduction of a technology. Projects often ran aground by ignoring sociocultural norms that ultimately undermined the intended outcome. Rice is traditionally a woman's crop in The Gambia. Irrigated agriculture ruptures traditional farming practices by replacing seasonal cropping cycles with year-round cultivation and rigid production schedules. In the Green Revolution rice projects, men expected their wives to grow the second crop without allowing them additional benefits. Women came to resent the augmented labor burden and the lack

of compensation. Ensuing gender conflicts prevented the irrigation projects from reaching productivity targets. Tensions only eased over time as women were granted a share of the paddy they produced and men began to assist in rice cultivation.

A consistent failing of Gambian irrigated rice development was the lack of foresight and funding support for milling and marketing surplus paddy. At no point did donors prioritize construction of a mill to process the marketable paddy mechanically, even though the alternative, handheld pestle and mortar by women, is a time-consuming operation. The existing mill was inconveniently located in central Gambia on the river's north bank, which necessitated trucking the paddy from the production area to a ferry with irregular service. To reach the urban coastal market required another day's journey and an additional crossing of the river. Impoverished rural growers could not manage milling and transport on their own without donor assistance, which was not considered in the planning of irrigated rice projects.

1986–Present: Market Reforms and Dependency on Imported Rice.

Beginning in 1986, the International Monetary Fund imposed on the Gambian economy a series of SAPs as conditions for loans. Economic reforms eliminated subsidized inputs and the producer support price that had encouraged the domestic rice sector. The

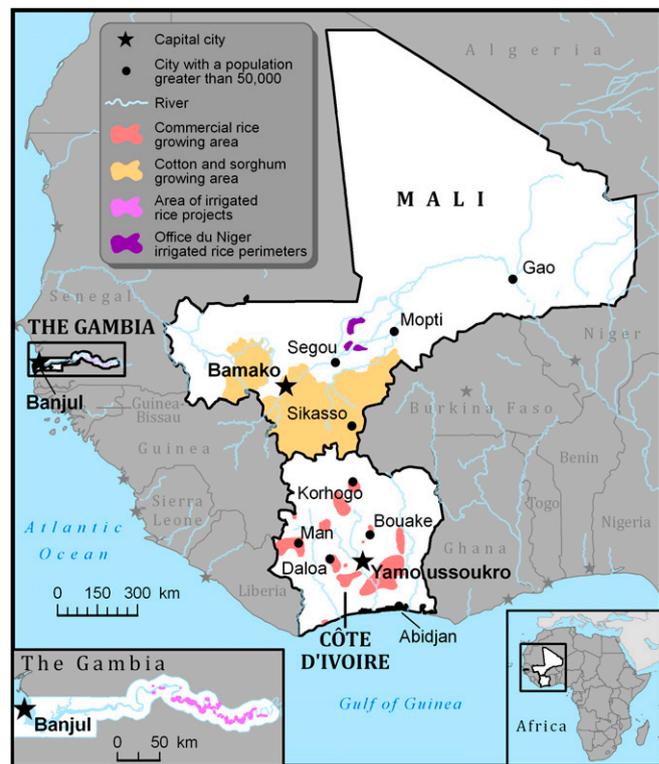


Fig. 1. Location of The Gambia, Côte d'Ivoire, and Mali, including relevant agricultural zones. (Cartography courtesy of Birgit Mühlenhaus, Macalester College, St. Paul, MN.)

parastatal organization responsible for rice purchases and inputs was dismantled, and agronomists posted to rural agricultural stations were dismissed from the Department of Agriculture or reassigned to the capital as part of a broader mandate to downsize government bureaucracies. The removal of protective tariffs for domestic production effectively lowered the cost of imported rice. Within a span of 10 years, milled imports more than doubled, although the domestic rice sector stagnated. Today, only 10% of Gambian irrigated rice projects produce the two harvests originally conceived, and most of the rice remains in the region where it was harvested.

The elimination of fertilizer subsidies in 1987 further undermined domestic rice production. Gambian growers soon realized that without fertilizer, the yields of hybrid rice were no more than those of traditional varieties. The termination of the fertilizer subsidy resulted in a 4-fold increase in the price of fertilizer by the end of the decade. Fertilizer imports that had stood at 5,500 tons with government subsidies in 1984 had declined to 600 tons by 1990. The cost of this critical input remains unaffordable to the majority of Gambia's rural farmers. In an agrarian economy, where the total area under cultivation is an estimated 285,000 ha, the country currently imports only 800 tons of fertilizer per annum.

The Emergence of Two Gambias. The long-term effect of economic reforms is a disarticulated national food sector and the emergence of two Gambias. One exists along the urban seaboard, where one-third of the country's population is fed with low-quality broken rice imported from Southeast Asia. The other Gambia is found in the country's interior, where rice cultivation remains significant yet fails to supply urban consumers located a few hundred kilometers away. Rice is a national symbol of cultural identity in The Gambia. Yet, the country's rice farmers, who remain principally women, are unable to take advantage of the growing urban demand for the grain. This is not because their rice is costly to grow but because the transportation, marketing infrastructure, and farm subsidies available in many rice-exporting countries do not exist. In dismantling the capacity of the state to provide agricultural services, the economic reforms contributed to disenfranchising domestic rice growers from a ready market for their output. Although the market may deliver cheap imports in some years, the 2007–2008 food crisis exposed the vulnerability of The Gambia and other West African countries that had acceded to market reforms.

Typical of the pattern found in other West African countries, milled rice imports to The Gambia now vastly exceed the amount produced domestically. An analysis of national production data shows that the ratio of domestic production to imports shifted dramatically during the decade of the 1980s (Fig. S1). During the two decades following independence in 1965, domestic rice production had steadily increased (9). The cultivated area peaked at 30,000 ha, and domestic production fulfilled half of the national demand. From the mid-1980s, the domestic rice sector began a decline that has not been reversed in a sustained way. Rice imports soared from 16,200 to 52,800 tons between 1983 and 1989, and domestic production fell from 33,700 to 29,500 tons. During this critical decade of market reform implementation, the share of domestic rice in the national market declined from 50% to just 15%. Since 2000, the domestic sector's share has stagnated at about 20,000 tons of paddy. Meanwhile, young men from farming households began to leave rural Gambia for coastal urban centers in search of improved economic circumstances. Their exodus had little effect on rice production, which remained primarily a woman's crop. The meager opportunities that migrants encountered in the capital produced few meaningful remittances. Migration to the cities did accelerate the urban demand for imported rice, however, which reached over 123,000 tons in 2008 (11, 12).

When market reforms were implemented in the mid-1980s, the reliance on imported rice to meet consumer demand did not appear to be a potentially calamitous strategy. The world market

price of rice, expressed in terms of constant 1990 US dollars per metric ton, fell from US \$571 in 1980 to US \$279 in 1995. However, the vicissitudes of international commodity markets were keenly felt in The Gambia in 2004 and again in 2008 during a period of rising consumer prices for milled imports. Between January 2003 and July 2007, the cost of a 50-kg bag of imported rice more than doubled, from 220 to 575 dalasis (US \$20), echoing worldwide trends in the grain's market price (13). At the height of the food crisis a year later, the cost doubled again to over US \$40. Although the market price fell in 2009, a bag of rice is still \$3 more expensive than it was in 2007. In a country where rice is the predominant dietary staple, a disarticulated food sector leaves consumers vulnerable to market forces and domestic growers unable to supply their needs.

Results: Côte d'Ivoire Case Study

Like The Gambia and Mali, Côte d'Ivoire is a low-income country where agriculture is crucial to the livelihoods of its people and to the national economy. Cocoa beans are Côte d'Ivoire's most valuable export and, together with other agricultural commodities, fueled economic growth in the 1960s and 1970s. As in The Gambia, since independence in 1960, Ivorian consumers have increasingly relied on rice as the dietary staple. National surveys show that average per capita rice consumption has risen from 27 kg in 1958 to 74 kg in 2006 (7, 14); urban consumption is even higher at 74–82 kg (15). However, national policies and the neoliberal reform priorities of international lenders made taking advantage of this growing demand difficult for Ivorian farmers. This section reveals policy shifts since the 1980s similar to those of The Gambia having a negative impact on Ivorian rice growers and processors. The Ivorian case investigates the origin of an emphasis on rice imports and questions a strategy so heavily reliant on rice. An overview of policy since the late colonial period shows that a rice self-sufficiency goal has long been in conflict with a free market strategy.

Rice Import Substitution. Policies giving priority to rice in national development strategies date to the French colonial period. Even before independence, a system of price stabilization, a fixed price for producers, tariffs on imports, and the first investments in irrigation contributed to an import substitution and food self-sufficiency strategy (16). At independence in 1960, the country's rice demand was met by producing \approx 100,000 tons of white rice and importing 30,000 tons (8). With the creation of the state rice company [Société de Développement de la Riziculture (SODERIZ)] after independence, Côte d'Ivoire reinforced its commitment to rice as central to national food policy. SODERIZ emphasized a Green Revolution strategy, building small dams for irrigation; training farmers; distributing high-yielding rice varieties; subsidizing fertilizer; and providing credit, a fixed price for paddy rice, and modern industrial mills (17). In 1974, SODERIZ increased the price 132% for purchasing paddy. Farmers responded with a huge harvest, and imports dropped to their lowest level since independence (Fig. S2). However, because of mismanagement, SODERIZ failed in 1977. Following its dissolution, SODERIZ remained for Ivorian farmers and policymakers an accomplishment of what is possible for domestic rice self-sufficiency at the same time that its ultimate collapse helped to support arguments for a neoliberal approach to national rice policy.

Structural Adjustment and Rice Imports. By the early 1980s following two decades of economic growth, world prices for Côte d'Ivoire's exports had fallen. In 1981, Ivorian leaders responded to the economic problems by obtaining a structural adjustment loan of US \$150 million from the World Bank with the conditions that it freeze government salaries, eliminate some public enterprises, and take steps to reduce the state's role in the economy. Over the next decade, a series of conditional loans led to reforms that greatly changed the state's relationship to rice, resulting in a steep increase in imports. An economic analysis of

the Ivorian rice sector specifically recommended abandoning the goal of self-sufficiency and instead paying for imports through revenue generated from crops with a comparative advantage, meaning cocoa, coffee, and cotton (4).

By the end of the 1990s, the 10 industrial rice mills built by SODERIZ with an estimated annual milling capacity of 550,000 tons of paddy were privatized (18). By 2002, none of those mills operated. Gone too were the fertilizer subsidy for irrigated rice, the state's modern seed farms, the fixed price for rice, and controls on imports. The 50% devaluation of the Communauté Financière Africaine (CFA) franc in 1994 might have made local rice more competitive with imports as it did in Mali (19). However, devaluation did not stimulate local production, or decrease rice imports, because it occurred as the rice sector was being privatized. Without a stable and attractive price, and with increasing input prices related to the currency devaluation, farmers had little incentive to produce and sell more rice. Gone was the state agency with a monopoly on importing rice, control of rice supplies, and the responsibility for regulating the national rice price. Privatization meant that the state's monopoly on imports shifted to a small group of private importers close to the president (16, 20). With regulation gone, imports rose, because consumers preferred the less expensive and lower quality (yet better milled) imported broken rice (15, 16, 19).

After Liberalization: Small Mills, Big Imports. By 2002, the national rice production and processing strategy of the 1970s had been replaced by unregulated regional producer-processor networks (17). The largest of these was in the Abidjan hinterland some 90–180 km north of the largest urban area (21). Others centered on the northern cities Bouaké and Korhogo, the western cities of Man and Danané, and Gagnoa and Daloa in the southwest. Each of these informal networks linked rice-growing agroecologies with urban market areas (Fig. 1).

Clearly, the private sector responded to the state's retreat from the rice sector not only by dehusking paddy rice but by providing other services to farmers once supported by the state. Micromills, with a dehusking capacity of 2–5 tons daily, and minimills, with a dehusking capacity of 6–15 tons daily, proliferated in West Africa in the 1990s following liberalization (19). In Côte d'Ivoire, merchant families experienced in local agricultural commodity trade purchased mills. In a survey of 75 micro- and minimills, 80% of owners reported purchasing the equipment with credit (17). The cost of milling depended on proximity to markets and the supply of paddy rice. The survey found that 37% of the mills provided credit, 24% owned trucks to bring rice from the field to the mill, and all dehusked and stored paddy was owned by farmers and small traders (Table S1). Mills in the more market-oriented regions supplying Abidjan and Bouaké provided more of these services. Clearly, free market factors were at work, but just how much could these small milling hubs in the rice commodity chain support rice farmers and contribute to national rice supply?

Gagnoa, a city of 119,000 in an upland and irrigated rice-producing zone, illustrates the impact of liberalization. Here, the milling neighborhood had 14 micro- and minimills in 2002. Gagnoa's SODERIZ industrial mill was privatized and closed. Local merchants purchased the first minimill in 1993. In 2002, the millers provided small loans for fertilizers and herbicides, but they complained about poor repayment rates of 60–65%. Both millers and farmers struggled with imported rice selling at 110 CFA francs per kilogram (US \$0.15) and local rice selling at 250 CFA francs per kilogram (US \$0.35). Comparable examples, but with distinct local conditions, from Man in the west, Bouaké in the center, and the milling centers of the Abidjan hinterland confirm the findings of other surveys (15, 19). Price, coupled with cleanliness and the propensity to swell with moisture and thus leave a satisfying feeling in the stomach, were the main factors when the urban poor purchased cheap imported rice. Within the cultural constraints of food preference, Ivorian consumers substitute between staples—maize, cas-

sava, yam, and plantain prepared in a variety of ways—when prices fluctuate. However, under liberalization, imported rice became very competitive as the cheapest calories in Ivorian cities (19). In contrast, those buying local rice did so for its taste or particular cooking properties. They paid more for their local rice preference both in retail price and in time expended to clean the rice.

Following the violence in the streets of Abidjan in 2008 as a result of the high price of rice, President Laurent Gbagbo acted swiftly to suspend import taxes on rice and seek self-sufficiency in rice by 2012.[‡] In his view, these moves were critical to restore civil order, such is the significance of rice to the Ivorian political economy. Furthermore, the call for self-sufficiency invoked an import substitution strategy that dates to the preindependence era (22).[§] Modest support for better processing could help to make local rice more competitive with imported rice. However, supply instability causes price fluctuations once regulated and now offering a market opportunity for cheap imports. When self-sufficiency was briefly achieved in the 1970s, the state's integrated production, processing, and marketing system was operating. Without such a system or the means to regulate the interests of politically powerful importers, and of the poor farmers who comprise the rice-growing labor, the president's calls for self-sufficiency risk having no weight. With imports flooding the country since liberalization, the state's strategy to achieve self-sufficiency in rice will need to take into account competition between local and imported rice as well as promotion of other domestic food crops.

Results: Mali Case Study

Mali is a land-locked country with 70% of its population being rural and agricultural. Cotton is the dominant cash crop, accounting for over 80% of export revenues (6). Rain-fed cereals (mainly millet, maize, and sorghum) constitute 85% of cereal calories, with rice providing the remaining 15%. Rice is more important in urban areas, accounting for half of cereals consumed (23). Mali produces 80% of its own rice, compared with 15% for The Gambia and 40% for Côte d'Ivoire. Although Mali imports rice, it is not a net food importer in most years (6). Average food prices in Bamako (Mali's capital city) never reached the levels they did in other West African urban centers during the 2007–2008 period. Nonetheless, the Malian government was sufficiently alarmed by rising food prices in 2008 to suspend tariffs on imported rice and ban exports of Malian rice to neighboring countries. The government also launched an upland rain-fed Nerica rice initiative in April 2008.[§] According to interviews in 2009 with key informants in and outside the government, most believe that this effort only had a limited effect on rice production.

This section argues that although the suspension of import tariffs may have exerted some downward pressure on rice prices, other factors more effectively explain Mali's better position during the 2007–2008 global food crisis. These factors include more robust rice and coarse grain sectors, a record grain harvest in the 2008 season spurred by good rainfall, burgeoning sorghum production linked to the collapse of cotton for export, and adaptable poorer households willing to switch to coarse grains when rice prices climbed. Further, many of these factors are linked to Mali's relatively good internal transportation network, landlocked nature, and past policy decisions.

State-Led Development in the Colonial Era and First Two Decades of Independence. Mali's Inland Niger Delta is one of the oldest rice production areas in the world and is the zone where African rice (*O. glaberrima*) was likely domesticated (24). In addition to this area, rice is traditionally grown in southern Mali's seasonal wetlands. Much of this rice is for home consumption. As in Côte d'Ivoire,

[‡]République de Côte d'Ivoire Communiqué du Conseil des Ministres. Présidence de la République de Côte d'Ivoire. June 19, 2008.

[§]New Rice for Africa (NERICA) is a cross between Asian and African rice varieties developed by the Africa Rice Center (WARDA).

policies giving priority to rice in national development strategies date to the French colonial period. The Office du Niger (ON) was initiated in the 1920s by the French with an initial focus on cotton, which was later switched to rice (Fig. 1). At the heart of this scheme was a dam constructed on the Niger River near Segou to divert water northward into a series of canals and irrigated perimeters. The success of this scheme is contested. Proponents point out that the ON has historically produced half of Mali's rice and, more critically, most of the domestic rice for urban markets (25). Critics note that this scheme, diverting water from the traditional downstream rice-growing areas of the Inland Niger Delta, suffers from salinization and was implemented at a massive human cost (26, 27).

The other crop given priority in the French colonial period was cotton, which also had traditionally been grown in the area. After failed attempts to develop export-oriented cotton along the Niger River in the ON irrigation schemes (28), the French finally settled on rain-fed cotton in the southern part of the country in the 1950s as the best way to valorize this colony (29). Many of these same policies emphasizing rice and cotton were continued during the first two decades after independence. Consistent with the modernization approach of the time, the state sought to capture surpluses from agriculture (including coarse grain trade) via marketing boards to invest in industry (23).

1980s and 1990s: Market Reforms and Export Orientation. Mali, like neighboring countries, went through a period of liberalization in the 1980s and 1990s in the form of structural adjustment. In the agricultural sector, the most concerted efforts were made to liberalize cereals marketing. Tariff barriers on imported grains were reduced. The grain marketing board [Office des Produits Agricoles du Mali (OPAM)], which had controlled consumer and producer prices, was also forced to relinquish its monopoly control. Although this change was significant, OPAM only handled between 20% and 40% of grain traded in the country, and an even smaller percentage of total production (85% of grain production was used for subsistence and not traded) (23). The loss of monopoly control by OPAM created a much larger official space for private grain traders. Nonetheless, OPAM continued to market much of the rice produced by the ON (because the state retained management of this scheme). Rice from the ON remained competitive because of donor investments in the scheme and Malians' taste preference for local rice.

Unlike OPAM, which was losing money and draining state resources, the cotton sector was not fully privatized because the cotton company, the Compagnie Malienne pour le Développement des Textiles (CMDT), was highly profitable, accounting for the majority of export revenues and a sizeable proportion of government receipts (Text S1, Discussion). Despite national production statistics for cotton and sorghum, which often demonstrate an inverse relationship (Fig. S3), the CMDT frequently maintained that cotton and grain production were complementary. Fieldwork in four rural communities in 2000 revealed a different story than that promoted to farmers by the CMDT (30). Of a sample of 65 households arrayed across different wealth groups, cotton production did rise significantly between 1982–1984 and 1997–1999 (Fig. S4). However, grain production during this period only rose for the top 10% of households classified as wealthy. Poor and intermediate households saw their surplus food production decline during this period (by –76% and –79%) as their cotton production grew (Table S2, Text S2). The Malian cotton crop peaked at 564,971 tons in 2004–2005. By 2007–2008, the cotton crop was 240,237 tons, a decline of over 50%. The chief reason for declining cotton production is a sagging global price, which was 14% below the 5-year average in 2007–2008 (31). Sorghum production rose dramatically as that of cotton declined.

Explaining Mali's Favored Position. The Malian case raises two key questions that have regional implications. First, what accounts for the shifting mix of imported vs. local grains consumed in Mali (partic-

ularly by urban dwellers)? Mali increased rice imports because cheap Asian rice was available with only modest tariff barriers. Furthermore, drought conditions and food shortages in the early 1970s and mid-1980s conditioned Mali to food imports as a way to resolve food problems. Finally, although Mali is still a predominantly rural country, its urban population has been growing at a steep rate in recent years and currently represents about 30% of the population (32). The increasingly urban nature of Mali's population partially explains a shift from coarse grains to rice. Other studies (1, 4, 32), as well as qualitative interviews with urban households in Bamako in 2009, suggest that rice is favored by urbanites as in Côte d'Ivoire (15) because of the ease and speed of preparation, a perception that rice is a more desirable foodstuff for middle-class households, and the ability of rice to expand greatly when it is cooked.

The second question concerns the implications of the current mix of domestic and imported food supplies for urban food security and rural livelihoods in Mali. A closely related question is why Mali became less dependent on imported rice than The Gambia and Côte d'Ivoire, even though it experienced similar policy reforms in the 1980s and 1990s. The rising price of food, particularly rice, was clearly a problem for Mali in 2007–2008. However, Mali's higher level of food self-sufficiency saved the country from the worst of this crisis. This higher level of national food self-sufficiency is related to several factors. First, Mali's landlocked status made imported rice relatively more expensive, a factor that favors domestic rice producers. Although being landlocked is often presented as a development handicap (33), in this instance, it created enough financial space for the sustenance and growth of a national food economy. Second, Mali's internal road network has improved in recent years, which reduced the cost of getting local rice to market (34). Third, local rice producers are aided by urban consumers who prefer local to imported rice, even when (to a point) local rice is more costly. Although poorer urban Malians, like their Ivorian counterparts (9), are more likely to consume cheaper imported rice, they also are more likely to switch to coarse grains when rice prices rise. This willingness to switch to coarse grains is, in part, related to urban Mali's relatively high number of recent immigrants from rural areas, many of whom are accustomed to a diet primarily composed of coarse grains. The collapse of cotton, and a switch of many cotton producers over to sorghum, meant that this grain was abundant and relatively cheap at the time when rice prices rose.

Discussion

Policy documents focused on urban consumers seldom reveal the extent of the contemporary agrarian crisis in West Africa. This crisis is typically blamed on population growth, consumer preferences, and backward techniques rather than on a policy context. Structural adjustment, which led to a series of policy changes across West Africa in the 1980s and 1990s, favored Asian exporters over West African producers. The removal of production subsidies and declining tariff barriers led to a flood of Asian rice on local markets. Policies in The Gambia and Côte d'Ivoire from the 1980s disfavored investments in extension services to rice farmers. The limited ability to mill locally produced rice, or to mill it in a low-quality fashion, was a further disadvantage to rice producers in The Gambia and Côte d'Ivoire vis-à-vis cheap imports. The vulnerabilities of this West African urban food regimen became glaringly apparent when the price for imported rice reached unprecedented levels in 2007–2008.

The findings of this study have implications for an ongoing discussion about the need for a new Green Revolution in Africa. We suggest that the Green Revolution efforts focused on rice in West Africa continue a long-standing urban bias in food and agricultural policy in this region. The African development literature often discusses the urban bias of state-led efforts during the two decades following independence in terms of price controls to benefit urban consumers and the taxation of agriculture in support of industry (3, 9, 23). This study argues that this bias, in the form of policies to

provide cheap rice for urban consumers, continued during the era of free market reform and is also resurgent in the current period. The focus on rice has been driven by a desire to address the demands of urban consumers for affordable food rather than as a goal to improve the livelihoods of rural producers.

Although short-term measures have been taken to reduce the cost of imported rice, national governments have largely returned to an older (before free market reform) strategy of producing more rice at home in the face of a volatile global market. They are assisted in these efforts by a donor community that now seems ready to invest in agriculture again, especially if it is focused on high-yielding and high-input varieties such as Nerica rice. Although it may seem otherwise, the current concern for increased rice production at home is more about helping urban consumers than rural producers. The bias of this effort is probably most evident in Côte d'Ivoire and Mali, where there is an abundance of other food crops, including many whose production could be more easily increased than that of rice.

Southern Mali, often noted for its potential to be the breadbasket of West Africa, historically has produced significant volumes of sorghum, maize, and millet. Although sorghum and millet can be produced with few inputs, the rain-fed variety of Nerica rice being pushed requires purchased seeds and fertilizers as well as relatively good rainfall. Furthermore, although women traditionally grow rice in southern Mali's seasonal wetlands, it is men who are being encouraged to grow rice in upland areas. Not only do men have little experience with this crop, but (according to semistructured interviews) they question planting rice in fields where they historically grew cotton and sorghum. Furthermore, there is no organized credit system in place to support the purchase of the seed and fertilizer required for rain-fed Nerica rice production. The novelty of upland rain-fed rice production for men, the poorly timed delivery of inputs, and the lack of a credit system to support rice largely explain why southern Mali's Nerica rice initiative performed under expectations in 2008 (31).

The question now is what these countries should do from 2009 moving forward. One option is a renewed emphasis on production

(a new Green Revolution in Africa), but we must be careful not to repeat the same mistakes of the 1960s through the early 1980s. These early attempts often favored the wealthy and male members of the community as well as cash crops over food crops. We must also revisit the policy context of the 1980s and 1990s that created the 2007–2008 crisis. As such, tariff barriers and subsidies may be appropriate to protect and support local food producers. The way forward will require that policy makers consider the needs of urban consumers and rural producers, the latter of which has almost always been a secondary concern. If innovative seed technologies are to be developed, these should be designed with the needs of the poorest farmers in mind, including women. The almost unidimensional obsession with rice might also be tempered, creating space for other crops that are well adapted to drier West African environments (millet, sorghum, and maize) or the more humid south (cassava, yam, and plantain banana). If food production is to be increased, the example of commercially successful cash-cropping endeavors in West Africa, such as cotton until the 2000s, suggests that as or more important than improved seed packages will be the credit systems, road networks, and milling/processing capacity needed to get crops to market.

Methods

The study's findings are based on household and market surveys as well as on an analysis of national level production data. The section on The Gambia draws on national data sources and repeated periods of fieldwork between 1983 and 2004. The Ivorian case study is based on fieldwork in 1990–1992 and 2002 plus other survey data. This fieldwork included a survey of 75 micro- and minimills in the main rice-growing areas of the country and 248 semistructured interviews with rice growers, petty traders, transporters, millers, and extension workers. The findings in the Mali case study are based on fieldwork in 1992, 1999–2000, 2003, and 2009. The fieldwork in 1999–2000 included a survey of 130 households detailing wealth levels, engagement with cotton production, and soil management practices. In July 2009, semistructured interviews were undertaken with 30 urban and 30 rural households about the 2007–2008 global food crisis (Text S3).

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