

TRANSFORMING THE RICE SECTOR

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This book presents analyses of primary and secondary data on the production, domestic markets, processing, consumption, and trade for the rice economy in Nigeria using a variety of economic models. The goal has been to identify constraints and opportunities for policy in order to transform and improve the domestic rice sector's competitiveness with imports. In this chapter, we summarize the key results and findings from this analysis and discuss the broad policy implications.

Increasing Rice Yields through Technology and Market Improvement

A number of key messages emerge from our analysis. First, rice has grown in importance and is now one of the most important staples in the Nigerian diet. The trend has been driven not only by income and population growth, rapid urbanization, and lifestyle changes but also by past policies that implicitly reduced the ability of local rice producers to respond to the growing demand and compete with cheaper imports.

The demand for rice will likely continue to grow. Moreover, given that a large component of rice in Nigeria is now being consumed by low-income households as well, rice has become an important component of household food security in the country. Our analysis shows that local rice and imported rice are consumed for different purposes. However, they are not easily substitutable for each other. This is confirmed by econometric estimates of the cross-price elasticity of demand between the two types of rice.

Therefore, a change in the price of imported rice alone is not likely to be sufficient to affect local rice consumption (which currently accounts for more than half of total rice consumption in rural areas). In addition, low-income groups—especially low-income urban households—are likely to be hurt the most by increases in the price of imported rice, which the government tries to achieve through import tariffs. Policies that focus on increasing the supply of

rice and thereby decrease the price of rice will generally be pro-poor, improving the welfare of low-income groups. Policies that restrict supply and thereby increase the price will generally be regressive, as rice accounts for a relatively large share of poor households' rice expenditures.

Thus, existing rice consumption patterns suggest that rice imports in Nigeria will continue to grow in the near future despite the government's effort to decrease rice imports through trade policies, unless domestic production increases substantially.

However, growing demand alone does not seem to lead to substantial rice paddy production growth in Nigeria. Our analyses indicate that while Nigeria has the potential to increase the competitiveness of local rice through increasing yield growth, there are many challenges to overcome. For example, given highly diverse and fragile soil types and a number of pests, diseases, and weeds that are relatively unknown outside Africa south of the Sahara (SSA), improved and higher-yield rice varieties imported from other countries are not as well adapted to local conditions.

The challenges and prospects for increasing yields vary widely. Northern Nigeria is relatively free of many of the most prevalent pests, diseases, and weeds, but areas with suitable soils are limited to the major river basins of *fadamas* (narrow inland valley bottoms along the two major rivers, the Benue and Niger). Supplementary investments will be needed to exploit fully these narrow suitable areas.

The potential to raise yields from expanding areas under irrigation also has challenges. For example, fertilizer responses of current irrigated varieties appear to be low, and irrigated rice production is often less profitable than rainfed rice production. These challenges indicate that many production technologies, including improved varieties, may be outdated, particularly for lowland and irrigated ecologies, leading to low adoption rates of irrigated rice. Empirical household analyses provide evidence that is consistent with this view: neither rice output nor irrigated rice area is very responsive to rice price increases. Various socioeconomic factors, such as underdeveloped input markets, weak extension systems, and high marketing transaction costs, have led to low levels of rice intensification and productivity.

Historical and international experiences are consistent with these findings. On the technology front, governments in many Asian and Latin American countries invested heavily in rice research and development (R&D), and as a result many of their domestically bred varieties became popular with a majority of producers. Additionally, earlier private investments in irrigation facilitated the successful adoption of high-yield varieties. Governments also

invested heavily in public irrigation schemes at a much higher intensity than Nigeria (given the size of arable land compared to Nigeria's). This ultimately affects a whole range of rice-sector activities, including efficiency of both input and output markets or capacity of R&D and extension delivery.

The growing demand has also not translated into improved postharvest processing of domestic rice for the market. Although the bulk of rice milling is still dominated by a cottage industry of small-scale operators located in villages and small town markets who produce an inferior rice variety relative to imports, the sector should not be ignored in favor of promoting large integrated mills for the sole purpose of ensuring locally produced premium-quality rice, as the government has been doing. While meeting the demand for premium-quality rice in the short run is feasible only through the use of the larger industrial mills, there is a real danger that in years to come the sector will still have to rely heavily on government support to remain competitive.

Model simulations of the rice milling sector highlight the vulnerability of this sector to changes in import tariffs and global rice markets, showing that the sector is unable to compete effectively without tariff protection. Experiences elsewhere in West Africa and Asia illustrate this same problem. Meanwhile, by not paying sufficient attention to improving the small-to-medium-scale sector, the demand for standard-quality rice would remain unmet.

Promoting (or at least not discriminating against) the small-to-medium-scale sector makes sense, as this sector is more economically efficient and more resilient to tariff changes or volatility in global markets. While this type of rice is less substitutable with imported brands, a majority of poorer consumers continue to rely on it (about half of total rice consumption), and the potential to upgrade the sector exists, as our results show. The sector can easily absorb a 25 to 33 percent increase in costs to further process and improve the quality of milled rice through de-stoning, polishing, and colorization. Returns can be raised if the current high trader and marketing cost margins can be reduced. One possible way of doing this is through the development of milling clusters, wherein economies of scale and location can be taken advantage of by a greater number of small-to-medium-scale millers choosing to locate within or in proximity to these clusters.

Experiences in Asia and elsewhere in West Africa also suggest that the growth and resilience of the small-to-medium-scale mills can play an important role in contributing to the employment growth and transformation of rural economies. Over time, as incomes have risen and consumer preferences have shifted more toward higher-quality rice, the sector has been able to adapt and attract investors along its value chain in order to upgrade equipment and

expand milling capacities. Government support has been critical, but it has mostly been in the following areas: providing access to technology and training; subsidizing credit and sometimes even the price of paddy; and investing in infrastructure to lower costs for energy, transportation, and access to markets and information.

With these supports in place, subagents for paddy producers and other new trader entrants appear on the scene, including those specializing in post-milling operations. Eventually, this route has led to the commercialization of specific rice brands, together with a system of quality grades and standards. While this process can take time, the Nigerian small-to-medium milling sector is poised to respond, given the right enabling environment.

Weak institutional capacity often constrains effective policy implementation and regulatory enforcement in SSA. In the Nigerian rice sector, this problem is manifested in its rice trade policy. Increased tariffs and import bans have not succeeded in substantially reducing rice imports. In part, this is potentially because high import tariffs can encourage unofficial imports (smuggling), both through Lagos port and other cross-border trading posts (including the border with Niger). Efforts to evade higher tariffs are difficult to enforce given the size of the market in Nigeria, the difficulties of collecting tariffs on imports coming through Nigeria's ports, and the expanse of Nigeria's porous borders with neighboring countries. In fact, at a high enough tariff level, imports could simply cease to pass through official channels, as they are diverted through other channels.

Thus, only a small percentage of tariff increases may be transmitted to the domestic market in the form of higher domestic prices of imported rice; moreover, the divergence between import parity price and domestic price of imported rice increases with higher tariffs. Empirical analyses show that only about 20 percent of increases in rice import tariffs and 33 percent of changes in the domestic price of imported rice are transmitted to the price of local rice. Producer prices, therefore, may not rise substantially either.

Simulations using an economywide multimarket model developed for Nigeria show that a combination of interventions related to production, markets, and trade may be necessary, although the feasibility of such an approach is unknown at this point. Trade and price policies alone, even if they are effectively enforced, will not result in stimulating a large supply response. If rice prices rise, consumers—especially the poor, who spend a larger share of their income on food—will be significantly hurt, offsetting any benefits to producers.

Alternatively, a rice-sector development strategy that focuses more attention on technological change and market improvement is likely to be more

successful in benefiting both producers and consumers, while also contributing to stable food prices and overall GDP growth. If an import tariff is warranted, maintaining a consistent tariff policy together with increased public investments in technological change and market improvements will be required to spur productivity growth. This is something that will not be easy to do, considering the government's record for implementing similar initiatives in the past. In addition, public investment in the rice sector can incur substantial opportunity costs, such as investments in other sectors, that must be carefully assessed.

Policies to Encourage Domestic Rice Production

Several factors may explain Nigeria's pursuit of transforming the rice economy. Recent food price spikes, growing demand for cereals like rice in Asia, including China, and slowing growth in rice production in major exporting regions all point toward increasing costs for importing rice for Nigeria. There is still considerable scope for developing the domestic rice sector. Unlike in other tropical West African countries, a substantial share of rice production in Nigeria is in the lowland ecologies, where much of the Green Revolution took place in Asia. Given its market size and the potential impact it has in international rice markets and West African food security, how the rice economy in Nigeria can be transformed is a question that merits serious examination.

Compared with its counterparts outside Africa south of the Sahara, Nigeria not only faces the dual challenges of catching up to Asia's Green Revolution and transforming the rice postharvest sector, it also faces the additional task of reversing decades of neglect in agriculture. Doing so in a fashion that will lead to a complete transformation of the rice economy in a short period of time is a formidable challenge. Therefore, many of the issues that have been addressed in this book have focused more on a medium-to-long-run perspective. A successful strategy will depend partly, but crucially, on stocks of knowledge and capital accumulated through past investments and long-term future investments in rice R&D and irrigation, supplemented by investment in physical infrastructure.

Though it is beyond the scope of this book to discuss the political economy aspects of long-term public investments, these investments need to increase substantially if Nigeria is to improve the competitiveness of its rice sector. According to recent estimates, the share of agriculture in total government expenditures was only 5.3 and 5.7 percent in 2009 and 2010, respectively (Benin and Yu 2013). The 2013 budget allocation for agriculture remained at

5 percent as a share of the total projected budget (Ukaoha and Ngene 2013). This is not very different from the 1970s, when the government was flush with petrodollars. Moreover, it is well below the 10 percent target agreed upon by African countries, including Nigeria, under the Comprehensive Africa Agriculture Development Programme, which is an initiative launched by the African Union to raise awareness of the importance of increasing government support of agriculture in Africa. It is critical for the Nigerian government to assess how effective support for the rice sector can be enhanced as part of broader efforts in raising agricultural-sector support.

The national government's commitment to the agricultural sector is encouraging and should be maintained, even though short-term responses may be limited, in part because of the small share of public expenditure still devoted to agriculture. Under its recent strategy for agriculture, the Nigerian government laid out an ambitious plan to achieve a transformation in the rice economy through policy reforms and fiscal investments. Aside from the use of import tariffs, the government also introduced reforms that include the deregulation of the fertilizer sector, marketing reforms that involve promoting the setup of private market corporations to help coordinate the market and set grades and standards, and innovative financing mechanisms for supplying credit. Additionally, interstate barriers to trade in paddy rice, such as taxes, were expected to be eliminated to reduce market transaction costs.

The policy and investment framework for transforming the rice economy is promising if it can be successfully implemented, kept consistent, and on course. Asia's own Green Revolution decades ago relied heavily on protective policies against imports and strong state involvement in providing subsidies and intervening in the market to help coordinate access to input and output markets and to stabilize prices (Johnson, Hazell, and Gulati 2003). In Asia, governments played important roles in various aspects throughout the course of the Green Revolution. Many of their roles turned out to be effective because they invested heavily in rice R&D, irrigation, and physical infrastructure. Moreover, many of these countries had established strong monitoring and evaluation systems by the 1970s, so that adequate time-series statistics on irrigated area, number of tractors, fertilizer use, and so forth are readily available. This has proved crucial for these countries to evaluate future policy options and monitor progress over time. It is now critical for Nigeria to do the same.

Finally, there is always the danger that a rice development strategy that focuses too much attention on displacing imports of higher-end quality rice will always have a strong urban bias, as Moseley, Carney, and Becker (2010)

caution. Unfortunately, this is already the case, considering that much of the focus on displacing rice imports across many countries in West Africa is being driven more by concerns of increased vulnerability to volatile global markets, threats of depleting foreign-exchange reserves, and political risks associated with not having sufficient supplies of affordable rice, especially in urban areas. In other words, policymakers' concerns about reducing the dependency on imported rice (especially higher-quality premium rice) are strongly urban biased. Concerns about improving the livelihoods of rice farmers appear to be secondary. Identifying the right balance between these is likely to remain an important policy question as Nigeria tries to define its rice-sector development strategy.