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IMPLICATIONS IFPRI PROJECT RESULTS IN BURKINA FASO FOR POLICY ISSUES IN THE "BEYOND MINDELO" SEMINAR*

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I. INTRODUCTION AND DESCRIPTION OF BURKINA FASO, SENEGAL, AND NIGER PROJECTS

In this talk, I will discuss the implications of IFPRI Burkina Faso research for the policy issues on the table here at the seminar, to wit: (1) the role of national cereal marketing boards; (2) cereal price policy aimed at producers of coarse grains; and (3) rice price increases brought on by tariff or quota. I will also briefly discuss the recently launched Senegal and Niger projects.

In 1984, IFPRI launched urban and rural survey research projects in Burkina Faso. These were part of the West African collaborative research network coordinated by IFPRI, dealing with issues relating to the substitution from traditional coarse grains to imported rice and wheat. I was outposted to Burkina from 1984-1986.

The two studies focused on the patterns of consumption and supply of coarse grains vs. nontraditional cereals at the household level, and on explaining the factors driving them.

The Ouagadougou study was a collaborative effort between IFPRI and CEDRES/ESSEC of the University of Ouagadougou. This was funded by USAID and others. It involved a year-long weekly household consumption and expenditure survey.

The rural study involved IFPRI-ICRISAT collaboration. It involved the ongoing ICRISAT baseline survey, which from 1981-1985 enumerated production and transactions in a rural household sample in three regions (Sahel, Sudano-Sahel, and Sudano-Guinea). Into this, IFPRI fit a consumption component. An off-farm income component was also added jointly.

In 1988, building the Burkina Faso experience, IFPRI launched survey research projects in Senegal and Niger. In each country, high and low potential regions are compared. Valerie Kelly, an MSU Ph.D., was posted to Senegal to work in collaboration with ISRA. Jane Hopkins, a Rockefeller visiting researcher, was posted to Niger to work in collaboration with ICRISAT and soon also a national collaborator. The projects are being supported by USAID.

The Senegal and Niger projects have in common a focus on explaining the crop consumption and supply choices of households in the face of changes in agricultural price and other policies, and the relative opportunity costs of activity in cropping, livestock, and

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off-farm sectors. They also examine the effects of these policies on welfare or real income of households.

While agriculture is the long-term driving force of the economies of these countries, rural households' short and medium run responses to food policy changes, technology options, and commodity choices are determined within the context of multisectoral opportunity costs. This implies looking at cropping choices and supply responsiveness within the context of rural households' overall income and food security strategies. We want to probe the nature and extent of this influence, and its implications for price, technology, and research policy and priorities, as well as the potential for enhancing intersectoral growth linkages.

I will now turn to the policy issues and discuss some of the Burkina research results.

II. THE IMPLICATIONS OF BURKINA FASO PROJECT RESULTS FOR "BEYOND MINDELO" POLICY ISSUES

In order to address the issues effectively, I will discuss both the demand and supply sides in the rural context, and then discuss the urban results.

A. Demand Side Issue: Role of Concessional Cereal Distribution

The rural study had several results pertinent to this issue. I will focus on a drought year (1984-5) results here, in order to be most relevant to the marketing board issue. First, purchases of cereals play a major role in the household food security of the poor. Second, food purchased from concessional sources such as OFNACER outlets forms a substantial part of the poor's diet. My key point will be that official price policy has an important impact on the rural poor in these regions on the demand side.

First, concerning the role of purchases of cereals in the household food security of the rural poor, we found the following. Purchases constituted about 1/3 of the poor's caloric intake in our Sahel sample during 1984/5. This rose as high as 7/10 in the "hungry season," or rainy season. For the Sudano-Sahel or Mossi Plateau sample, almost 2/5 came from purchases; the figure was about 6/10 in the "hungry season."

The dependence on and vulnerability of the rural poor to the market shown by the above figures, flies in the face of what to me is conventional policy wisdom that Sahel farmers are relatively removed from market forces, even autarkic. Thus, policies that affect prices will affect the real incomes of the rural poor on the demand side.

Second, concerning the role of purchases of food from concessional sources such as the government marketing board OFNACER, we found the following. First, in the Sahel sample, the proportion of

the poor's consumption coming from red sorghum and maize was about 1/3 for the 1984-5 period. In rainy season 1985, this proportion was as high as 1/2. These crops are virtually not produced in that region (Reardon and Matlon, 1987). But 95 percent of the red sorghum and 70 percent of the maize for the Sahel sample was purchased from official sources, mainly OFNACER. In rainy season 1985, the ratio of the market price of millet to the mainly concessional price of maize was 1.4:1; for red sorghum it was 2:1.

The upshot is that in a terrible drought year, the Sahelian poor were able to fill from 1/3 to 1/2 of their food security needs from grain mainly being sold to them by OFNACER at strongly concessional prices. Thus, by making cereal available, and by boosting real income, the government marketing agency was serving a beneficial purpose in that region at that time. One could say it was filling a gap, and boosting equity in the process.

The same was not taking place for the Sudano-Sahel sample. In that sample, the proportion of the poor's consumption coming from red sorghum and maize, again not important crops in production, was only about 1/7 for the 1984/85 period. In the hungry season, 1985, it was less than 1/20. Only about 1/20 of these purchases were from official sources. The equity effect via OFNACER was thus minimal compared to the Sahel; the Sudano-Sahelians had to pay market prices for their grain, which usually were not too far below the market prices reigning in the Sahel.

B. Supply Side Issue: Cereal Price Policy Aimed at Coarse Grain Producers

The IFPRI/ICRISAT rural supply and consumption study had several results pertinent to this issue. First, only a negligeable portion of grain sold is sold to government purchasers such as OFNACER. Second, coarse grains play a very small part in overall crop sales in all but the Sahel region. For all regions sampled, sales were only a small portion of total cereal output (that is, marketed surplus was low). Third, income from cropping, at least in a drought year, is a minor proportion of total income. The key point to be established is that rural households in the regions sampled accorded a relatively minor role to coarse grains in crop sales and overall income strategies dummy for 1981 to 1985 period.

When thinking about modifying producer relative price policies (either directly, or indirectly via tariffs or quotas), the degree to which the farmer perceives the incentive to grow and sell coarse grains, relative to growing and selling cotton or investing time and money in livestock or off-farm enterprises, must be taken into account. If the relative incentive is not great enough, the supply response will be minimal and the equity effect on the demand side, negative. This is in addition to thinking about physical and distributional constraints to supply responsiveness. Two results standout.

First, concerning the proportion of grain sold to OFNACER, we found the following : in the North and Middle regions, or Sahel and

Sudano-Sahel, virtually none of the marketed cereal surplus was sold to the government in the four years (1981-85) of the ICRISAT survey. In the South, or Sudano-Guinean zone, 1/10 of sales of millet (a relatively minor crop there) went to OFNACER. Thus, the government appears to have very little leverage on the sales side, either to "extract surplus" or to provide incentives. One might expect that official prices may have some effect on the regional markets, and thus indirectly exert influence. However, in the Sahel and Sudano-Guinean samples, very little of the grain sold was even sold in the extra-village markets. The great majority was sold in the village itself, to other households. The exception was the Sudano-Sahel, where about 1/3-1/2 was sold in the extra-village market (Reardon, Delgado, Matlon, 1987).

Second, concerning the role of coarse grains sales in overall crop sales, and in the disposition of cereal output itself, we found the following : for the 1981-85 period, virtually all of the crop sales in value terms were of millet and sorghum in the Sahel. In the Sudano-Sahel, this proportion dropped to only 1/3. The rest was comprised of crops that figure only negligeably in consumption: tubers and beans constituted almost 1/3, and peanuts 1/3. In the Sudano-guinean sample, millet and sorghums as a whole comprised only 1/20 of sales. 90 percent of crop sales revenues came from cotton. Thus, "cash" crop pricing and marketing conditions and policies in two of the three zones appear perhaps to have a greater impact on cash incomes than do cereal price policies (Reardon, Delgado, Matlon, 1987).

In the same vein, we found that the proportion of coarse grain output that is sold is very small in each region: it does not exceed 8 percent for 1983-85, which covered a fairly good and a bad harvest. The same goes for the proportion of grain disposed of in the form of gifts. The great majority of output is consumed at home.

Why might this be? We are in the process of exploring this analytically, but I will hazard some guesses. Coarse grain prices in these regions exhibit very extreme seasonal and inter-year variations. When harvests are good, prices can plunge precipitously, as they did in the bumper harvest of 1985 and even more in 1986. Thus, farmers probably do not feel that they can count on coarse grains as a solid source of purchasing power. Even when they succeed on the output side, they may lose on the net real income side.

This is a "catch 22" situation however. Given the thinness of the markets, prices fluctuate widely. But the wide price fluctuations encourage thinness in markets. The cost of an effective market intervention to control prices or change market conditions may be very high, if it is determined to be desirable. On the other hand, the market opportunities to sell non-cereals in city markets are relatively good. Selling these items may even carry less "stigma" than selling grain (McCorkle, 1987). Moreover, cotton has a stable selling price and secure market, as well as input credits attached to it. Is it any wonder that farmers in the zones with the highest

agroclimatic potential eschew grain sales and embrace cotton sales?

Third, concerning the role of cropping in the overall household income or purchasing power strategy, we found the following. Focusing on the 1984-85 period again, we found that for the majority of Sahel sample households, about 7/10 of income came from nontransfer, noncropping-related sources (that is, not from production or agricultural wages). In the Sudano-Sahel, only a little more than 1/3 came from these sources (1/3 from agricultural wages, 1/3 from own cropping). In the Sudano-Sahel, where the purchasing power of the peasantry was more dependent on the fate of the local agricultural economy, the effects of the drought were more directly felt. Hunger was much more widespread in the Middle' as compared to the Northern' sample (Reardon, Matlon, and Delgado 1988; Reardon and Matlon, 1987).

Now I will summarize my rural points. Households depend a good deal on the market from the demand side. In bad years, this fact gives OFNACER a crucial role in providing them access to cheap food, when the market appears not to. On the supply and income side, rural households treat coarse grains as a consumption item, and not a cash generator. In general, where possible, the households try to diversify their incomes multisectorally. Price policy and technology options have to be examined within this context.

C. Equity Impacts and Potential Effectiveness of Rice Price Increases Induced by Tariffs/Quota

The IFPRI/CEDRES Ouagadougou Cereal Demand study nad several results pertinent to this issue. First, the poor consume as much rice as the rich in physical terms, and even more than the rich when seen as a proportion of their food budget. Second, rice consumption is not very price sensitive in any income stratum. I will now expand on these two points.

First, concerning cereal demand patterns of Ouagadougou households, we found the following. In physical terms, about 1/3 of the cereal that both the poor and rich eat is rice. Their patterns diverge in the other categories. While 1/5 of the cereal diet of the rich comes from wheat, the figure is only 1/20 in the case of the poor. For coarse grains, altogether they constitute a little less than 2/3 of the cereal consumption of the poor, while they comprise only 2/5 of that of the rich (Reardon, Thiombiano, Delgado, 1988).

The upshot of this is that rice is not a luxury good. When we examine the portion of the cereal budget in francs comprised by rice, we find as much as 45 percent in the case of the poor, and 35 percent in the case of the rich. The fact that rice purchases take up almost half of the poor's cereal budget, which itself is half of their food budget (compared to only 1/3 in the case of the rich), means that a rice price increase induced by tariff or quota (for example) would have a significant impact on the welfare of the poor. Proportionally the effect would be much less for the rich. The

tariff would thus be a regressive tax. If a tariff or quota was enacted, the desire for equity would indicate the need for compensatory measures.

The negative equity effect is aggravated by the fact that the poor pay a relatively higher price for their grain. Due to transaction costs and cash flow limits, they tend to be less able to buy from concessionary sources such as OFNACER (Delgado and Reardon, 1988).

Second, concerning the price sensitivity of rice consumption, we found the following. For the poor, the proportion of rice in total cereal consumption in physical terms did not vary much over the seasons. It even attained its maximum during the millet harvest season of 1985. The proportion ranged from 0.35 to 0.41. For the rich, there was also not much fluctuation.

Contrast this with the wide fluctuations in relative cereal prices over the 1984-5 period. In October 1984, the price ratio of millet to rice was 1.03:1. In January 1985, it was 0.79:1. In July 1985, it was 0.91:1. In September 1985, it was 0.65:1.

Rice as a proportion of cereal consumption maintained relative stability despite wide price fluctuations. The two sets that really changed places over the seasons were millet and sorghum on the one hand, and maize on the other. When maize became relatively cheaper, its proportion in total coarse grain consumption rose steeply. When it became more expensive, the share of millet and sorghum in consumption rose steeply. These results were confirmed econometrically. We found that for the poor, rice demand is inelastic with respect to income. The rice price itself has an insignificant effect on rice consumption. However, the cross price elasticity of maize, and millet/sorghum is very elastic. The cross price elasticity of rice, and millet/sorghum is low and insignificant (Reardon, Thiombiano, and Delgado, 1988)

Hence, the consumption of one coarse grain is very sensitive to the price of another. However, the consumption of rice is not very sensitive to its own price, nor is it sensitive to the price of coarse grains. The upshot of this is that the important tradeoffs in consumption are among coarse grains, rather than between coarse grains and rice. This is especially true for the poor.

Why is this? Recall that for the poor, the share of rice in the cereal diet in physical terms is less than its share in the cereal budget in money terms. For the rich, the shares are about equal. The share in money terms is greater in the case of the poor because they consume a very large proportion of their rice in prepared form purchased from a street vendor. The proportion is almost 1/2. The rich eat only about 1/10 of their rice in this form.

Let's focus on the poor's high consumption of street vendor rice. When we look at the poor's employment characteristics, we find

that the incidence of wives working away from the home (in petty commerce) and of men working at commerce and manual jobs, is much higher than for the richer households. Coupled with relative high transport costs, the nature of their work demands that the poor stay near the worksite at lunchtime. This leads them to buy street vendor food. The most readily available food of this type is prepared rice. This is mainly because it is cheaper and faster to prepare for the vendors. Rice's lower preparation cost renders its per kilogram cost in consumable form nearly the same as that of millet (Thiombiano, 1985; Reardon, Thiombiano and Delgado, 1988).

The upshot is that the poor's time use and employment patterns encourage them to consume rice, and give stability to these patterns in the face of relative price patterns. This is the interpretation behind the elasticity results presented earlier.

The policy implication is that, at least within observed relative price ranges, raising the price of rice will not easily cause the rice habit to crumble. It is the process of urbanization itself, and its attendant structural changes, that are promoting the consumption shift. This means that a tariff or quota may very well not be very effective in lowering rice consumption. The hardest hit would be the poor.

These results confirm at a disaggregated, stratified level some macro level findings for West Africa of Christopher Delgado. He found that there was not much correlation between rice prices and substitution toward rice in West Africa; there was a positive correlation between the degree of urbanization and rice consumption (Delgado, 1987).

Finally, comparison of the detailed income estimates in the rural and urban 1984/1985 surveys suggests that it is not correct to view all urban people as "rich" relative to a rural sector universally benefitted by food price increases. In fact the richest part of the southern rural sample was considerably better off than the poorest part of the Ouagadougou sample. Furthermore, many rural people were net food purchasers during this period, implying that their welfare was hurt by food price increases.