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Food Security and Economic Growth
in the Sahel:
Summary of the September 1989
Sahel Cereals Workshop

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This document reflects the personal opinions of its authors and is not necessarily an expression of the views of the OECD, the Club du Sahel or the CILSS.



I. INTRODUCTION

This paper summarizes the empirical research results presented and related discussions at the USAID-sponsored "Workshop on Food Security and Economic Growth in the Sahel" held in Washington, D.C. September 6-8, 1989 (1). This was the third annual workshop on cereals policy in the Sahel sponsored by USAID. This year's workshop focused on regional trade and food security policy dialogue in anticipation of the CILSS/Club du Sahel seminar on that topic scheduled for Lomé in November. Representatives of USAID, the World Bank, IFPRI, European research institutes and universities, American universities, development organizations, and consulting firms convened during the workshop to address the following key questions:

How do import/export policies affect local foodgrain consumption and production in the Sahel?

where does the comparative advantage in Sahelian agriculture lie?

What has been the fate of Sahelian food security objectives in the West African trading environment?

How can Sahelian food security objectives in West Africa be enhanced by encouraging the production and marketing of noncereals commodities in West Africa?

In organizing the workshop, special emphasis was given to involving participants who have conducted recent empirical research in Mali, Senegal and Niger.

II. PRESENTATIONS AND DISCUSSION

This section presents the empirical research results and debate on (a) the effects of trade policies on coarse grain production and consumption, (b) comparative advantage and how to increase the competitiveness of Sahelian agriculture, (c) food security and regional cereals trade, (d) non-cereals production and trade, and (e) food aid.

A. Effects of Trade Policies On Coarse Grain Production and Consumption

1. Effects on Consumers

Several studies indicate that trade policies that permit imports have been beneficial to consumers. The Tufts University consumption research conducted in urban areas in Mali (Lowdermilk and Rogers) found that the budget shares of rice and

(1) This paper draws upon C. Hanrahan's lucid summary of the workshop.

millet/sorghum are constant across income classes and that substitution between rice and millet/sorghum is not significant when relative prices change (low cross-price elasticity of demand). These findings provide important evidence on several consumption-related issues. First, since budget shares are similar across income classes, it is not true that rice is only consumed by the relatively wealthy and that coarse grains are inferior goods in urban Mali. Second, a low cross-elasticity indicates that raising rice prices will be relatively ineffective in shifting consumption towards coarse grains (at least over the price range covered by these studies). Finally, the negative income effect of higher rice prices could be substantial on the urban poor. Based on this research, it is possible to conclude that liberalized trade that permits imports is beneficial to urban consumers because it provides them with relatively cheap rice (Rogers). Rogers added that non-price characteristics of rice, such as short preparation time and the ability to meet household consumption with a smaller amount of rice than coarse grains, brings the effective price of rice much closer to the market price of coarse grains.

Collaborative research undertaken by the University of Ouagadougou and IFPRI in Burkina Faso revealed that urban rice consumption is not very sensitive to the ratio of rice and coarse grain prices (Reardon, Thiombiano and Delgado, 1989). This research also demonstrated that the urban poor are important rice consumers, obtaining one third of their cereals-based calories from rice and allocating 45% of their cash expenditures on cereals to rice.

ISRA-MSU research in Senegal showed that it is not only urban consumers who would benefit from liberalized trade. This work indicates that rural consumers have some preference for rice, with annual purchases ranging between 65 and 42 kg. per adult consumer in the northern and central Groundnut Basin (Crawford). The level of consumption of rice among rural households generally does not exceed 25% of total cereals consumption. Yet this level is significant and suggests that the Senegalese government's ceiling on rice imports, if it were effective, would actually be harmful in the short-run to rural food security. In reality, large [unofficial] Gambian re-exports of rice to Senegal at prices below the prevailing official price enabled ISRA-MSU sample households in the Peanut Basin and the Casamance to save, on average, over 7,000 CFAF per household per year (Crawford). IFPRI research in Senegal, Mali, Niger and the Côte d'Ivoire showed that the price elasticity of demand is not high for rice. For example, in Niger a 1% increase in the price of rice relative to coarse grains is associated with a decline in rice consumption of .46% (Delgado, 1989). At prevailing prices, this means that a 15 CFAF increase in the price of rice relative to coarse grains would only reduce rice consumption by 4-5%. This finding suggests that the price needed to significantly change consumption patterns for rice would be quite high (Delgado, 1989). In addition, this research found that non-price factors, including trends in urbanization, shorter processing time, ease of preparation, fuel savings, and the increased opportunity costs

of women's time, played an important role in driving rice consumption. This indicates an important role for coarse grain processing research in improving the competitiveness of coarse grains relative to rice.

2. Effects on Traders

Other studies have shown that traders benefit from large re-exports. The INRA-IRAM-UNB (2) research on West African trade flows indicate that re-exports, especially between UMOA countries and countries without hard currencies, are a very important component of overall trade volume. Merchants in countries with non-convertible currencies re-export to countries in the CFA zone to obtain the hard currency they need to import manufactured products.

The CESA-MSU study of Malian traders during the liberalization of the coarse grains market found that with domestic liberalization there has been an increase in specialization among traders, a decrease in concentration among wholesalers in Bamako, and new entrants to the wholesale grain trade (Mehta, 1989). In addition, CESA-MSU research conducted in both southern Mali (OHV and CMDT) and northern Mali (near Gao) has shown that the private sector is serving almost all areas, including those which are deficit or of difficult access, albeit at high costs in some areas (D'Agostino and Staats). Extrapolating these results to the possible effects of trade liberalization on the economy, it is reasonable to expect an increased competitiveness of the private sector along with reduced transactions costs, although this would depend on how the trade reform is structured. Traders would benefit from less restricted movement of grain permitting scale economies in transportation, savings in fines and bribes and reduction of other transactions costs.

3. Effects on Rural Households

At the farm household level, results of the CESA-MSU studies in Mali suggest that trade that increases access to and supply of coarse grains probably would help the large number of rural net buyers of coarse grains (D'Agostino and Staats). These households produce most of what they consume, yet are net purchasers from the market because their total production is not adequate to meet total household requirements. Simulation exercises indicate that certain farm households would benefit the most (in terms of net revenue from coarse grain transactions) from reducing seasonal and interannual price variation. Households benefitting the most are only in the market to buy grain or are in the market early in the year to sell coarse grain and later in the year buy grain back. CESA-MSU research indicates that these households have relatively low levels of annual net coarse grain availability.

(2) INRA is the Institut National de Recherche Agricole; IRAM is the Institut de Recherches et d'Applications des Méthodes de Développement; UNB is the Université Nationale de Bénin

The CESA-MSU research in Mali also has shown that non-cereals sources of income, including revenue from cash crops (cotton), commerce, livestock, migration, and artisanal activities, are a very important part of rural household income strategies. Diversification into non-cereals production activities is more prevalent in the northern, chronically food-deficit, zone than in the southern zone (Sundberg, 1989). More detailed case study research on the CESA-MSU farm household sample revealed that the range of revenue generating activities is greater among food-insecure households than among food-secure households. In addition, food-insecure households also tend to engage in activities for which the raw materials are easy to find (materials for mats and ropes) and which require less human capital (i.e., skills for such jobs as butcher or blacksmith) and investment capital (i.e., inventory for commerce, carts for transportation, etc.) (D'Agostino and Sundberg, 1989).

4. Effects of Trade: Emerging Consensus

There was a general consensus among conference participants that there is a relatively more important role for investment (a long-run strategy) than prices (a short-run strategy) in increasing coarse grain production in the Sahel. Price increases alone cannot be expected to dramatically alter farm household production decisions. In addition to improved price policies, simultaneous investments in basic agricultural research and input and output marketing institutions are needed to stimulate coarse grain production.

The argument for restricted trade is that imports reduce the prices of rice and wheat relative to millet and sorghum, and relatively cheap rice and wheat discourage coarse grain production. However, several of the workshop participants argued that the solution is not to restrict rice imports, which is a both costly and relatively ineffective policy in stimulating production in the short run. Rather, solutions should be sought that reduce the costs of production for millet and sorghum through technological breakthroughs (Delgado). Incentives for farmers to expand output must be approached from both a technology and a price policy standpoint. Using high prices alone as a strategy to promote cereals growth would increase the price of the basic wage-good, thereby hindering economic growth in other sectors of the economy by driving up labor costs. The coarse grain price increases brought on by restricted trade could actually be detrimental to food security, given the rural and urban consumption and production patterns mentioned above. In addition, large coarse grain price increases are generally not politically sustainable. Finally, although a protected market might be successful in increasing the prices of millet and sorghum relative to imported rice and wheat, evidence on the overall positive production effect of higher prices generally is weak. Only a small proportion of surplus-producing households have a long-run capacity to respond to price incentives and would benefit in the short-run from higher prices. Because of this, the equity effects of higher coarse grain prices resulting from restricted trade are likely to be skewed.

Workshop participants generally agreed that more stable or predictable prices would help consumers in the short run, and most producers and consumers in the long run by facilitating better planning and investments. The unpredictability of government trade policies have major consequences not only on farm prices but also on other government and donor programs aimed at improving domestic grain marketing, such as trader and village association marketing credit (D'Agostino and Staatz). There is a need for better information on export potential and on government policies in order to help traders and farmers make informed credit decisions. In addition, it was agreed there is a need for better coordination of domestic and trade policies.

B. Comparative Advantage

1. Presentation and Discussion

Overall most workshop participants agreed that the Sahel does not have a general comparative advantage in rice production, although some land-locked countries may have a comparative advantage in rice production for home consumption and for providing secondary cities (Stryker). In coastal countries, local rice producers do not have a comparative advantage in supplying the port city when the cost of imported rice in the port city is compared with the cost of rice in inland rice producing areas and the high costs of local transportation (Crawford and Martin). Evidence suggests that, with some exceptions, Sahelian producers do have a comparative advantage in cotton, cowpeas, dryland cereals, and livestock.

A very important determinant of comparative advantage, of course, is the exchange rate. Stryker estimated that in 1987 in Mali the CFAF was overvalued by 33%, taking into account only the budget deficit (i.e., ignoring price distortions created by policies) (Stryker). Even then, Stryker felt that the actual overvaluation of the CFAF was much higher. The effect of this overvaluation on the economy is to penalize exports by making non-tradeable goods expensive relative to tradeable goods, as well as to encourage rent-seeking behavior by those who attempt to get undervalued foreign exchange. Overvalued exchange rates hinder the growth of the economy (Stryker). For example, the over-valued exchange rate and consequent high wage costs in Mali constrict the development of profitable textile and leather industries (Ahlers). Given the difficulties in changing the exchange rate, however, a second-best solution would be to try to change the other factors that determine comparative advantage (e.g., land and labor productivity).

The common method used to determine comparative advantage, the measurement of domestic resource costs (DRC), was criticized because it is a static measure whereas comparative advantage is really a dynamic concept (i.e., DRCs measured at one point in time give little guidance on how comparative advantage will evolve--as in the growth of cowpea exports from Niger or the decline of groundnut exports from Senegal). The use of DRCs was also criticized because they measure costs in a partial

equilibrium framework. The issue about whether general equilibrium decisions can be made by looking at DRCs for a particular subsector such as cotton or maize was raised (Simmons). Despite the limitations and problems associated with DRCs, the fact remains that governments and donors still need some criteria to assist them in their investment decisions (Jones). This is where DRCs, carefully interpreted, might be useful.

2. Comparative Advantage: Emerging Consensus

What is needed to improve the competitiveness of Sahelian agriculture? It was generally agreed that, in the long-run, a strategy of investments to foster technical change and raise productivity is needed. In the short-run, there must be a strategy to eliminate or at least reduce transactions costs, which include not only transportation costs but also barriers to trade such as bans, tariffs, licensing, and regulations on both the export and import side.

It was also agreed that two aspects of comparative advantage require further research. First, there is a need to know more about the effect of trade policy on local cereals processing. Included in this is the need for research on improving the potential for local cereals processing in order to improve the competitiveness of coarse grains relative to rice. Second, at present, the timely supply of local policy research and the demand for empirical information to inform policy is relatively weak among Sahelian governments. On the supply side, donors need to give greater attention to helping Sahelian governments strengthen the capacity to generate timely local information and analysis. The demand for the results of this research will largely depend on the way in which the research is designed and implemented and its relevance to policymakers (Weber et al.). In Mali, recent evidence suggests that the relationship between supply and demand for local policy research is becoming more dynamic. There, the market information system (SIM) is providing timely analysis of market trends (price and volume) and government policies to both the private and public sectors.

C. Food Security and Regional Cereals Trade

1. Presentation and Discussion

One of the few accepted "facts" concerning West African cereals trade is that official government estimates of trade flows only measure part of actual transactions. INRA-IRAM-UNB research showed overall that because imports are grossly underestimated and re-exports aren't even counted, actual trade is quite large (Egg, 1989). For example, the INRA-IRAM-UNB research estimates that Niger frequently imports, unofficially, more than 100,000 tons per year of millet and sorghum from Nigeria. Re-exports are also very important. There are countries that import significant quantities of subsidized rice and wheat which are obviously not for own consumption. For example, the INRA-IRAM-UNB estimates that the Gambia re-exported 65,000 tons

of rice to Senegal in 1986 and in 1987. Significant re-exports of rice from Mauritania to Mali and from Benin to Nigeria also are cited (Egg, 1989). Thus trade takes place in clandestine as well as official channels and often, because of government regulations, quantities move from one channel to the other as they move from one country to the other. This makes calculation of real trade flows difficult. The INRA-IRAM-UNB evidence suggests, however, that trade volume for coarse grains is generally weak except when there are big differences in production or prices between countries.

The INRA-IRAM-UNB studies demonstrate that when viewing both formal and informal markets, trade flows among West African countries are significant. And in many cases trade is not explained so much by underlying "basic" comparative advantage as by differences between national economic policies and structural elements (such as different monetary zones). Disparities in national policies such as bans, import and export tax regulations, and enforcement influence competitiveness and generate much of the regional exchange. This implies that it is inappropriate to design effective national trade and economic policies assuming a closed economy model. There are subregions within the overall West African region which are already very linked. Many border areas, where there is effectively little or no control of trade, operate as free-trade zones. So, rather than discussing "one large regional trade zone" we need to discuss the reality of multiple trade zones.

2. Regional Cereals Trade: Emerging Consensus

A consensus among workshop participants seemed to be that the Sahel ought to pursue intraregional trade because it could clearly benefit from the export markets presented by coastal countries, which have higher levels of disposable income. However, there are important changes in agricultural technology that are taking place in coastal countries which may influence the Sahel's regional trade position (Wilcock). If the coastal countries improve their comparative advantage in certain areas of agriculture (e.g., through the development of hybrid maize to supply the poultry industry in the Côte d'Ivoire) then the Sahel's comparative advantage will weaken in these areas.

Sahelian countries must be prepared to compete with technological advances, such as hybrid maize, or shift emphasis to other crops, if they are to keep their export markets. In other words, the Sahel must take a long-run view and adapt to changing conditions in and structure of the regional market.

Little is known about how the gains from regional trade are distributed at the micro-level (among urban consumers, traders, rural households) and the macro-level (among countries with different natural resource endowments). However, what is known is that because of the extreme interannual variability in production and because there are differences in the distribution of gains from trade, international trade policies will come under extreme pressure in good production years as well as in

particularly difficult years. Liberalized trade policies can disappear overnight because of political pressure (Christensen). Consequently, although policy changes are a necessary condition to stimulating economic growth, there must be simultaneous and on-going investment in biological and marketing research as well.

D. Non-cereals Production and Trade

1. Presentation and Discussion

Research conducted by CESA-MSU in Mali showed that there is an important complementarity between coarse grain production and trade, and the production and trade of non-grain products, such as cotton (Dione). Cotton production provided access to purchased inputs, such as animal traction equipment and fertilizer, which also helped coarse grains production expand. Most importantly, the cash crop provided, over the long-run, a stable source of revenue to capitalize the farm, village associations and the broader regions through the financing of infrastructure.

Furthermore, there is empirical evidence that non-cereals crops play a positive role in enhancing household food security. Again, research conducted by CESA-MSU in Mali showed that in the CMDT cotton provides farmers with the cash needed to pay taxes in the post-harvest period (Dione). Therefore, these farmers, unlike their counterparts in non-cotton-producing areas, are not obligated to sell coarse grains immediately after the harvest, a period of usually very low prices. Cotton also improved access to financing for investment in coarse grain production, livestock, non-food agricultural production and non-farm activities especially commerce. So cotton not only allowed farmers the income to feed themselves (from own production and the market) but also provided a steady stream of income to sustain investments in agriculture and off-farm activities.

The increasing evidence on the positive role of non-cereals production and trade on agriculture indicates that it is clearly important to encourage export crops. Yet there remain important obstacles to full development of export potential among West African countries. To date, when prospects have appeared bleak for a commodity (such as groundnuts in Senegal) the response of donors and national governments often has been to "get out" of producing these commodities (Gbetibouo). In contrast, Southeast Asian countries have responded to low market prices by investing in development of improved technologies to reduce unit costs of production, thereby maintaining the countries' competitiveness in world markets.

Another obstacle to developing export potential has been the low value of the commodities exported. There is a clear need for research in product transformation to increase the value added to the export commodity. In Niger, decorticating cowpeas or milling cowpea flour are options that should be explored to transform cowpeas into a higher value export crop (Holtzman).

During the workshop discussion on non-cereals production and marketing, two major points were made concerning the role of livestock development in the Sahel as a means of absorbing periodic cereals surpluses (Eriksen). First, livestock producers have had to absorb much of the costs associated with the lack of investment in improved cereals technology in the Sahel. Because cereals yields have not been increasing, political leaders in the Sahel have been under strong pressure to allow agriculturalists to push crop production into traditional rangelands, including ecologically fragile areas and seasonally flooded areas (e.g. Mali's interior Delta) that served historically as dry-season pasturelands. Hence, the decline of the livestock industry and environmental degradation in the Sahel are directly linked to the failure to develop improved dry-land cereal varieties. Second, if reliable cereals surpluses can be produced in the Sahel, there may be some potential for livestock to use them. Poultry, swine (in non-Muslim areas), and short-cycle ruminants (sheep and goats especially for traditional holidays) offer more promise than cattle production. Moreover, if the EEC and the US reduce their milk surpluses, as they appear to be doing, a domestic dairying industry may also become viable.

2. Non-cereals Production and Trade: Emerging Consensus

The diversification at the farm-level between food and non-food crops, and between on-farm and off-farm activities is an important household strategy, especially where agricultural income is unstable. But it is the synergy among cash crops, cereals, livestock and non-agricultural activities that is the motor for economic growth at the farm household level. Overall, broad-based agricultural growth is needed to generate the domestic demand for non-agricultural commodities. There was a general consensus, however, that the lack of productivity increases in the coarse grains sector has hindered growth in Sahelian agriculture and slowed the rate of structural transformation.

There was considerable discussion of alternative strategies for the Sahel's regional trade position (WILCOCK). If the coastal countries improve their comparative advantage in certain areas of agriculture (e.g., through the development of hybrid maize to commodity subsector research involves the concentration of resources around a specific commodity in a systems framework that assesses demand for the commodity and emphasizes related vertical coordination actions required to produce and market that commodity successfully. This includes commodity-oriented production and marketing technology research, infrastructure development, credit and input distribution, marketing arrangements and export development. Not all participants in the workshop accepted the commodity approach, perhaps partly out of confusion about the commodity subsector approach ("filier"), and the implied roles and responsibilities of government. Part of the confusion arose from differences in interpretation of the approach. Some participants in the workshop opposed the promotion of a commodity subsector approach because they interpreted it to be a rationale for vertical integration of production and marketing functions under one monolithic government subsidized

or controlled organization. Other participants supported the commodity approach, in part, because it concentrates resources and anticipates a more comprehensive set of constraints that arise in the commodity chain from production to consumption. These participants did not interpret "commodity approach" to mean that the vertical coordination tasks would be carried out by one organization. Rather they believe a combination of private and public sector actions are needed to achieve a coordinated set of investments and market facilitating functions.

The question of the appropriate role of government in the commodity subsector approach remains. The emphasis on privatization that characterized donor thinking in the early 1980s is now being tempered (Lele). There is still a recognized need to sanction and facilitate the private sector. Yet there is clearly a need for strategic public sector involvement in areas such as seed storage, cereals marketing price supports and inputs distribution since these are areas where the private sector has not been willing to invest because of the high risks (Lele). The World Bank's MADIA research has shown that in countries where there has been a major production increase and a decline of agriculture's share in the GDP, the public sector has played an important facilitating role.

E. Food Aid

1. Discussion and Emerging Concerns

There is genuine concern with improving the use of food aid, and the proposed Club du Sahel food aid charter represents the good intentions of the donors on this issue. However, in the 1980s there has been little empirical work on improving the effectiveness of food aid.

The one generalization that can be made about food aid is that its effect in a country depends on how it is managed. Because of this, the food aid experience has been very country specific. There are as many examples of where it has helped as examples of where it has hurt.

Food aid is rarely thought of as a development resource to promote food security and economic development. It is important to increase the integration of food aid with research and policy change. An example of where multi-year policy reform has been linked with food aid has been the case of the PRMC in Mali.

III. EMERGING POSITIONS REGARDING FOOD SECURITY AND ECONOMIC GROWTH

The following points are quasi-conclusions from the workshop, although they were not universally agreed to by the participants:

1. There appears to be little economic or non-economic justification for a regional protected cereals market in the Sahel. In addition, it was generally accepted that regional protection would not be operationally feasible. There is,

however, a need to coordinate trade policies among West African countries (coastal states as well as the Sahel).

2. Long-run investment in research (agronomic, breeding, and marketing research) is needed to increase the competitiveness of Sahelian agriculture.
3. Investments are needed to reduce the transactions costs for trade (which include administrative barriers to trade). This calls for investment in institutions, infrastructure and information.
4. Diversification needs to be promoted based on comparative advantage through the "filière" or commodity subsector approach. This is a practical approach supported by the results of the MADIA study by the World Bank.
5. Given the high opportunity cost of scarce government resources in the Sahel, exactly how the public sector should encourage growth in the agricultural sector is open to debate. To complement and facilitate private sector growth, strategic government actions are needed to support research, provide infrastructure, etc. The role of government might also include providing policy analysis and market information services. At a time when many economies are undergoing structural adjustment, the issue of where government ought to invest to stimulate longer-term growth becomes critical.
6. Food aid must be managed better with the help of better policy analysis, information, and infrastructure. Food aid is an important development resource and as such should be one element in a comprehensive set of policies.
7. Cereals policy should be placed within a broader context of income generation strategies rather than considered in isolation. There is a general consensus on the need to look more systematically at the food system as a whole rather than just parts of it.

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