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**INSTITUTIONAL REFORM AND AFRICAN
SMALLHOLDER: MARKET LIBERALIZATION,
ROAD REHABILITATION, AND
TECHNOLOGICAL CHANGE IN TANZANIA**

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**Institutional Reform and The African Smallholder:
Market Liberalization, Road Rehabilitation, and
Technological Change in Tanzania**

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Introduction

The poor performance of agriculture in sub-Saharan Africa in recent decades has been a major contributor to growth, welfare, and balance of payments problems for that region's nations and a source of alarm for international observers of hunger and food security trends. Development specialists have regarded it as a prime illustration of the dangers of state intervention in pricing and marketing, and of neglect of governmental responsibilities in areas such as the provision and maintenance of a suitable transportation infrastructure.² Although a recipient of special attention due to its policy of African socialism or *ujamaa*,³ the causes of agricultural decline in Tanzania were similar to those elsewhere in the continent. These included an attempt by the state to monopolize crop marketing; low producer prices linked to an urban/industrial bias, parastatal inefficiency, and an overvalued exchange rate; and neglect of road maintenance and other aspects of infrastructure.⁴ Tanzania went into

1. This paper is the result of a research project on "Institutional Renewal in Rural Tanzania" which was funded by the Institutional Reform and the Informal Sector (IRIS) program at the University of Maryland, support of which is gratefully acknowledged. I would also like to thank Dr. Enos Bukuku for hosting and Brown University's Institute for International Studies and Center for the Comparative Study of Development for funding my visit to Tanzania in August 1991, Mr. Oswald Mashindano for research assistance throughout the IRIS project, and the Economic Research Bureau of the University of Dar es Salaam, including Dr. Robert Mabele, Dr. Wilbrod Maro, and Dr. Joseph Semboja, for its general support. Finally, I am grateful the staffs of Global 2000 in Atlanta and of the SG2000 Project in Tanzania for their kind cooperation with this research, and to Albert Ngondo, George Olesh, and Jan Nyhoff of the Marketing Development Bureau, Ministry of Agriculture, for providing data on recent agricultural production and prices.

2. Classic references include World Bank, 1981 ("the Berg Report") and Bates, 1981.

3. While the size of the social science literature on Tanzania is probably disproportionate to its population, the country's recently estimated 25 million people make it the fourth most populous state in sub-Saharan Africa, excluding South Africa.

4. The view that Tanzania's agricultural problems were significantly attributable to government promotion of collective farming is assessed and rejected in Putterman,

accelerated economic decline when its decision to chase the intruding army of Iddi Amin back to the Ugandan capital piled added fiscal burdens atop the oil price shock of 1979 in a nation institutionally and ideologically unprepared to accept its macroeconomic realities. While still resisting IMF and World Bank calls for restructuring in the early 1980s, Tanzania's leaders acknowledged the need to loosen their state agricultural monopoly as early as 1981. By the late 1980s, the nominally cooperative marketing system that had been established in 1984 had itself been judged inadequate, and the country had freed internal trade in food crops, initiated a dramatic devaluation of its currency, and begun efforts to create independent and financially accountable cooperatives capable of competing in unregulated produce markets.

By the early 1990s, reform was in the evidence in most sectors of Tanzania's economy and society. A broad import liberalization program put goods of every description onto Tanzanian shop shelves, so that (in a marked reversal of the situation a decade earlier) even Kenyans were coming to Tanzania to shop. The 1970s nationalization of much of the country's commercial real estate still stood, but new private construction was being encouraged and was readily found in the major towns. Foreign exchange bureaus proliferated, private (foreign-owned) banks were opened, and a privatization commission was at work on the disposition of state enterprises. While power continued to be wielded by the C.C.M.,⁵ the Nyerere era was decisively closed with his retirement from the party chairmanship in 1990, and the debate which he invited on the once sacrosanct one-party principle had led to the legalization of opposition parties, to press liberalization, and to the announcement of plans for multi-party elections in 1995. After declining at a rate of 4.7% per annum during 1976-80 and by 1.6% per annum in 1981-3, real per capita GDP was estimated to have grown

1985 and 1990. An influential corroborating view is that of Ellis, 1982. See also Bryceson, 1993.

5. Swahili acronym for Party of Revolution.

by 0.9% in 1984-5 and by 2.0% per annum during 1986-90.⁶ Tentatively satisfied with the progress of reform, foreign aid donors responded with commitments rebounding from a low of \$490 million in 1985 to about \$850 million in 1989.

During 1992 and 1993, the author used a combination of farmer interviews, discussions with officials, and analysis of relevant documents and data to study major aspects of change affecting farming, and in particular peasant or smallholder farming, in Tanzania. The research focused, first, on reforms affecting marketing and input supply, with particular attention to the revival of cooperative societies, to the ending of the state monopoly in food crop procurement, and to the more hesitant steps to reform the institutions for the marketing of traditional export crops. A second focus was on the ongoing efforts to rehabilitate Tanzania's road network, and their impact at village level. Finally, the research looked at the question of technological modernization, focusing on attempts to promote more input-intensive and higher-yielding methods of producing Tanzania's leading staple crop, corn. This paper summarizes the findings of that research, with the first three sections being devoted in turn to the topics just mentioned. Problems of institutional design, implementation, and sustainability receive attention throughout. The final section concludes the paper with observations about the requirements for the future development of agriculture in Tanzania.

1. Marketing and Input Supply

Agriculture is the mainstay of Tanzania's economy, providing about two-thirds of GDP, a still higher share of employment, and over half of export revenues. The country contains a number of high-potential agricultural regions, and estimates suggest

6. World Bank, 1991, Table 1, p. 3.

that only 13% of potentially arable land is currently cultivated. The health of Tanzania's economy is inevitably linked to the performance of its agriculture sector.

Before independence in 1961, the territory of Tanganyika⁷ presented a story of relative success with respect to the development of commercial smallholder agriculture. It saw an early and vigorous flowering of African smallholder production of cotton and coffee, and the formation of economically successful member-based marketing cooperatives in the main areas where those crops were grown. During the first decade following independence in 1961, grain exports exceeded imports, and the main smallholder-produced export crops--coffee, cotton, cashew nuts, tobacco, and tea--experienced annual growth rates, by volume, averaging 6.8, 7.1, 9.4, 18.0, and 10.1%, respectively.

Under German and British rule, agricultural trade was at first dominated by traders from the Indian sub-continent. Established by the African growers, cooperatives such as the Kilimanjaro Native Coffee Growers Union (KNCU) and the Victoria Federation of Cooperative Unions (dealing principally with cotton) were seen as a way of protecting producers' profit margins. They made little inroad into the food crop sector, however. Free trade in such crops was eventually constrained, but state intervention in the purchasing of both food staples and export crops was moderated during the remainder of the 1960s and the early 1970s because the cooperatives which purchased the crops from farmers retained a measure of autonomy, including the ability to offer differing prices depending on local conditions.

7. Tanzania was formed in 1963 through the union of mainland Tanganyika and the islands of Zanzibar, to its east. The discussion in this paper is effectively confined to developments in the mainland.

In the early 1970s, however, the government began moving the inhabitants of less densely settled parts of the countryside from dispersed homesteads into larger development villages. Upon completion of this "villagization" exercise in 1976, the existing marketing cooperatives were deregistered by the government, and the villages were told to act as multi-purpose cooperatives, purchasing crops from their residents and selling them to the concerned parastatals. The National Milling Company (N.M.C.), for example, was charged with purchasing grain from villages throughout the country at a unified producer price, regardless of transportation costs. N.M.C. was also asked to sell milled flour to consumers in the major towns at what, with escalating operating costs, became increasingly subsidized prices. Separate parastatal bodies took responsibility for delivering to villages the required inputs and taking from them their output of coffee, cotton, tobacco, pyrethrum, and cashew nuts, with each such organization also being entrusted with the jobs of transporting, storing, processing, and arranging for export of their product. Trading in other goods was restricted, too, as regional trading and transport companies were established and an attempt was made to replace small private traders with village-owned shops.

By the early 1980s, low official prices,⁸ late payments, and unreliability of crop pick-ups, led farmers in many parts of the country to stop or reduce their sales to the N.M.C. The volume of official corn purchases fell from 220,400 tons in 1978/79 to 104,600 tons in 1980/81 and to 71,000 tons in 1983/84.⁹ Analysts suspected that unauthorized private trading replaced most of the shortfall. In 1980, the government appointed a task force to consider the revival of cooperative unions, and the Prime Minister announced the decision to revive the unions in 1981.¹⁰ Legislation was

8. Bryceson's data (1993, p. 232) show the real producer price of maize falling from 53% of its 1963 value, in 1976, to 31% of that value, in 1981.

9. Bryceson, 1993, Table IV.1, p. 233.

10. Bryceson, 1993, p. 79.

passed in 1982, but the revived cooperatives began operating only in the 1984/85 agricultural season, marking the first hesitant step in an initially slow process of market liberalization.

Whereas food crop production was largely determined by peasants' subsistence needs and parallel (illegal) trading in surpluses was widespread, cash crop producers were often unable to find an alternative to the official buyer.¹¹ When the real return to cash crop production fell due to increasing overvaluation of the Tanzanian shilling and a growing share of receipts devoted to transport, storage, and processing, producers simply reduced their expenditure of effort on these crops. In a study of the Tanzanian procurement systems, Ellis (1983) found that the proportion of the world market price of the six leading export crops going to the producer, when the latter is converted at the *official* exchange rate, fell steadily from 70.3% in 1970 to 41.7% in 1980.¹² Using a market-clearing exchange rate, the producers' share of the world market price fell further still.¹³ The long-term upward trend in the production of export crops was reversed. From the 1976/7 season to that of 1985/6, cotton production fell from 65,930 to 32,846 tons, cashew nut production fell from 97,626 to 25,773 tons, tobacco production dropped from 18,822 to 15,040 tons, and pyrethrum output fell from 3,251 to 1,351 tons.¹⁴ The corresponding annual growth rates are -7.4, -13.8, -2.5, and -9.3%, respectively. Partly in response to the boom in world market prices during 1976-78, coffee output grew by 10.3% a year from 1976/7 to 1980/81, but then fell by

11. There were undoubtedly some exceptions in areas close to national borders--e.g., coffee production in Kilimanjaro Region, a nonnegligible share of which must have illegally found its way into Kenya.

12. See also Ellis, 1982.

13. The general retail price index rose at an average of 18% a year during 1976-81 (Bryceson, 1993, p. 226), but the official exchange rate was essentially constant over this period at 8.3 shillings to the dollar.

14. See Bevan *et al.*, p. 185. Cotton seed output is converted here to cotton lint equivalent at a rate of 2.941:1 which is derived from Marketing Development Bureau data.

4.4% a year until 1985/86, resulting in moderate net growth during this nine year period but in more or less level trend between the mid-1970s and the mid-1980s as a whole.¹⁵

The regional "cooperative unions" which began operating in 1984 turned out to be effectively public entities that did little to enhance efficiency. Neither the unions nor the village primary societies could be considered cooperatives, by international standards, since membership was automatic for all adult village residents, and there was no share capital. The unions were financed not by their constituent societies but by grants and loans from the government, including the "return" of assets that had once belonged to independent cooperative unions and were subsequently appropriated by state marketing bodies. Unions' managers were appointed by government, and government charged the unions with supplying inputs to and purchasing crops from farmers at prices it fixed. Although attempts were made to assess the unions' costs and to include appropriate margins in the prices at which they in turn sold to the government marketing authorities, the unions tried to fulfill their charge whether a particular transaction was profitable or not. In many cases, the government was asking the union to engage in a crop purchasing exercise without any possibility of recovering its costs. When unions incurred losses through a combination of internal inefficiencies and unreasonable government demands, the banks (also owned by the government) routinely tided them over with credit. The political rather than commercial nature of the unions is made clear by these factors.¹⁶

15. *Loc. cit.* Bevan *et al.*, who provide an extensive comparison of responses to the coffee boom in Tanzania and in neighboring Kenya, blame the negligible long-term response in Tanzania on rationing of manufactured goods in rural areas (see below). For another comparison of Tanzanian and Kenyan agriculture, see Lofchie, 1989.

16. For a more detailed analysis, see Co-operative College/Afro-Aid, 1990.

The policy of uniform pricing meant that villages and regions that were relatively remote from the main markets for their products might find sales to the official channels attractive at the same time as better situated villages and regions sought to evade legal controls and sell to private traders. The supply of chemical fertilizer and other purchased inputs was also linked to crop purchases, because the unions could deduct the territorially uniform input cost from the crop purchase price at the time of purchase. Thus, the pattern of official input sales and crop purchases shifted over time in favor of regions less well situated with respect to the market, raising overall cost to the nation.

Pressure to reform the structure of the revived cooperatives came from two quarters. While pressure from donors and internal cooperative advocates were probably behind the decision by the second Mwinyi government to pass a new Cooperative Act and to install a reformist leader from the Cooperative College as Commissioner for Cooperatives in 1991, it was efforts to erase the massive debts from the books of these banks, which began in earnest around 1990, that brought the unions to their knees.

On paper, the new Act was to bring the cooperatives into conformity with international cooperative principles, thus satisfying the donors. In practice, however, existing union managements continued to control entities that had changed little but for a drastic decline in activity due to the drying up of credit. The government's order to the banks to withhold credit from any union found to be unworthy of it on conventional commercial criteria created a severe crisis for the unions. Until inquiries into the apportioning of union debts between government and the unions could be completed, banks limited their financing to specific activities assured of an immediate return, at the same time tightening their credit requirements. In particular, the banks advanced funds

with which to purchase crops only after their representatives were taken to society depots at union expense and shown physical evidence of the crop to be purchased. Since the unions could obtain no credit to finance input supply, they were unable to continue the practice of advancing inputs to growers on a credit basis. Tight credit and cumbersomeness of credit requirements also contributed to the exit of the unions from the food crop sector, where other buyers were often readily available, but where a bulk buyer from the union might be difficult to find (see below).

By 1993, a significant decline in union activities was becoming evident in those areas in which food crops were an important part of the union's business. Numerous reports had indicated that "many, if not most, of the ... cooperative unions are technically bankrupt" and there were rumors that some would be wound up.¹⁷ Yet no steps had been taken as of late 1993 to liquidate even one union. Ways in which the government helped unions to survive included, in some cases, designating them as agents to purchase grain for the nation's Strategic Grain Reserve, or asking export crop boards or banks to advance unions money for crop purchases when existing debts meant a union would not otherwise receive a loan. By mid-1993, government decisions on the disposition of unpaid debts tended to absolve the unions of responsibility for all but a small fraction of these.¹⁸

17. World Bank, 1991, p. 70.

18. For example, managers of NJOLUMA said they expected the government to accept responsibility for about 90% of that union's unpaid overdraft. The general manager of Ruvuma Cooperative Union reported that the government had removed all but TSh 500 million of its TSh 2.7 billion debt. The Morogoro Cooperative Union was left responsible for TSh 100 million of a TSh 2.3 billion overdraft. These decisions may have been fair, since the government caused a great deal of debt to be generated by ordering unions to undertake activities that turned out to be unprofitable. But it is almost impossible to divide responsibility between union mismanagement or corruption, on the one hand, and government intervention, on the other. It is not unreasonable, therefore, to view the substantial removal of old debts as an indication of a continuing political desire to keep the unions alive.

Liberalization in Practice: The Foodcrop Sector

By 1976, Tanzania had embarked on the traditional socialist path of having a state monopoly purchase grain and edible oils from farmers and ration the milled products to urban consumers at controlled prices. But the country proved unable to adequately administer this program. In the late 1970s, an average of over 46% of the grain purchased by N.M.C. was sent to Dar es Salaam, leaving such areas as Mbeya, Morogoro, and Mwanza dependent on parallel markets for 70 to 80% of their needs.¹⁹ As illegal trade grew and the costs of N.M.C. procurement from remote southern regions escalated, the country also turned increasingly to imports. In the 1980/81 to 1982/83 marketing years, total N.M.C. purchases averaged only 88 thousand tons of corn, while sales averaged 263 thousand tons, of which 133 were in the Dar es Salaam/Coast region. Meanwhile, Tanzania imported 251 thousand tons of corn in 1980, 155 thousand in 1981, and 133 thousand in 1982.

As official supplies became less reliable, consumers turned increasingly to private suppliers. At first, the latter operated strictly illegally, and were repeatedly attacked in government pronouncements as "economic saboteurs." By 1986, however, private wholesale trade in grains was openly sanctioned by national leaders, and soon afterwards, private traders were legally permitted to buy grain from cooperatives, although not directly from farmers. Official legalization of private purchases from farmers came in 1989, by which time the public supply of food staples at controlled prices had effectively ended in Tanzania's towns. Subsidized grain supply disappeared without a public uproar because the system had become irrelevant to urban residents by the time of its formal removal.

19. Keeler, *et al.*, 1982, pp. 74-6.

Why state control over trade in food crops was ended while that over traditional export crops continued is an interesting question of political-economy for which some tentative answers might be offered here. A first factor requiring mention is the relative magnitude of the financial losses associated with state monopoly. N.M.C.'s cumulative debt to the state-owned banks had reached TSh 2.3 billion in 1981, and 88% of the subsidies allocated to agricultural parastatals between 1978/79 and 1983/84 went to N.M.C.²⁰ The grain monopoly had become a financial black hole, an operation encouraging high cost producers to produce a climatically risky crop for a guaranteed buyer whose internal accounts went unaudited over long periods, inviting massive waste and fraud. The public as beneficiary was poorly served and hence put up little resistance to the system's demise.²¹ Farmers in most regions already sold most of their crop to private traders. In the context of Tanzania's overall economic crisis, the enormity of the N.M.C.'s losses was simply too great to permit the managers of that body, who were the main beneficiaries of its monopoly, to stave off pressures for reform.

The response of producers and traders to liberalization in the food crop sector has been viewed favorably by most observers. Estimated production of corn rose from 2013 tons in 1984/85 to over 2200 tons in 1985/86 and over 2500 tons in 1988/89, while imports correspondingly fell from 107 tons in the first year to a rare net export position in the last one.²² Production of wheat and rice also grew. As of 1993,

20. Bryceson, 1993, p. 78.

21. In fact, Bryceson characterizes support for private trade by then Prime Minister Salim A. Salim and President Mwinyi as highly popular with Dar es Salaam's residents.

22. Marketing Development Bureau 1992 provides both Crop Monitoring and Early Warning Bureau and Ministry of Agriculture Statistics Unit estimates of total output, which differ significantly in the last two years reported in the text. The exporting of grain surpluses following the 1988/89 harvest, while perhaps an omen of Tanzania's ability to help feed its neighbors (see below), actually cost the government heavily,

however, trading at village level was often of an irregular and small-scale nature, with some danger of trader monopsony in remote areas. The effects of liberalization were differentially felt by producers in different locations. And the absorptive capacity of the national market still posed a constraint to farmers' productive potential. Grain production failed to rise after 1989, and estimated 1992/3 output was down to an estimated 2282 tons.²³

Limited development of the international market for Tanzania's grain appears to be an obstacle to the transition of the sector from recovery to sustained growth. Analysts point out that most of the country's population and its more favorable growing areas are located near its perimeters, making food self-sufficiency a costly approach. Rather than shipping rice the over 1200 kilometers from the interior Rukwa region to the Indian Ocean port of Dar es Salaam, they argue, that city could be supplied more cheaply by imports, while Rukwa's rice could be shipped to the neighboring landlocked nations of Zambia and Zaire. A related and equally fundamental issue is whether Tanzania's aggregate grain output could expand if international markets were exploited. Tanzania has one of the most favorable balances of land to population in Africa, includes areas of reasonably high fertility, and is somewhat less susceptible to drought than some neighbors. To date, however, the government has not promoted the grain trade, for fear of compromising domestic food security. Thus, licenses to export must be obtained from regional authorities, although illegal cross-border trade may be substantial in some areas.²⁴ Liberalization has not been a boon to producer prices,

because purchase prices exceeded those of the external market at the then prevailing exchange rate.

23. Tanzania Food Security Bulletin No. 6.93, Dar es Salaam, July 1993.

24. A food crop expert at the Ministry of Agriculture's Marketing Development Bureau privately estimated that "at least 40,000 tons of maize, rice, and beans" are illegally moved from western Tanzania into Zaire and Zambia each year. (Interview, 9/23/93.)

which have shown substantial declines following good harvests.²⁵ This is especially worrisome in view of the World Bank's conclusion that agricultural growth between 1983 and 1990 was "a one-time phenomenon associated with a return to a market clearing situation in the rural economy that cannot be expected to sustain growth in the 1990s" (1991, p. 68). One must conclude that Tanzania's desire to make cheap food available to the domestic consumer is in conflict with the potential to expand production, which might be achieved with modest public assistance to develop the infrastructure of cross-border trade.

Export Crops

As indicated above, reform has made the least headway in the realm of the traditional export crops, of which those produced by smallholders are cashews, coffee, cotton, pyrethrum, tea, and tobacco. Control of the trade from purchase at village level to sale to foreign buyer, at first monopolized by parastatal authorities, was revamped only to the extent that cooperative unions purchased crops at the villages before selling to the latter entities. Since the cooperatives were themselves quasi-public bodies, this created an extra layer of bureaucracy with no increment in competition.

Devaluation of the Tanzanian shilling, which accelerated in the late 1980s, offered hope of stimulating exports, since the producer conventionally received a portion of the *official* purchase price. The shilling, which stood at 7.1 to the dollar in 1970 and 8.2 to the dollar in 1980, reached 32.7 to the dollar in 1986, 99.3 to the dollar in 1988, and 195 to the dollar in 1990. But domestic inflation averaging over

25. For example, as estimated national production rose from 1712 metric tons in 1983/84 to 2528 tons in 1988/89, the average maize price in constant 1989 shillings fell from 48 to 26 shillings per kg. With output down to 2111 tons in 1991/92, average price was 40 shillings per kg. Marketing Development Bureau, 1992, pp. 13 and 32.

30% a year, the impact of devaluation on input costs, unfavorable world market price trends, and reduced government capacity to subsidize input distribution and marketing operations meant that there was for the most part no windfall to the producers of traditional export crops.

For example, arabica coffee, one of Tanzania's main foreign exchange earners, sustained a sharp decline in world market price following the collapse of the International Coffee Agreement in 1988. Prices averaged around \$4,000 to \$5,000 per ton during 1980-1986 but had reached \$1,291 per ton in 1992. Even though Tanzania's coffee farmers were paid an unsustainable 97% of the world market price in 1992 compared with just 38% in 1989, they received an almost identical shilling price in the two years (TSh 294 versus TSh 295 per kg.) The country's recorded arabica production hovered around 35,000 tons during 1989/90-1992/3, almost the same figure as had been achieved in 1972 and down from peaks of 52,000 tons in 1980/81 and 44,000 tons in 1988/89. Total coffee production (including also robusta coffee) stood at about 54,000 tons during 1989/90-1992/3, compared with nearly 62,000 tons in 1980/81 and nearly 60,000 tons in 1988/89.²⁶ Export earnings dropped from US \$185 million in 1986 to only \$77 million in 1991.

By contrast to coffee, cotton, a perennial crop grown mostly in the semi-arid regions south of Lake Victoria, responded well to a generally improving incentive environment. Average world market prices fell only a little between 1985 and 1991 before recording a sharper drop in 1992. Although the share of the export price captured by the producer fell from an average of 86% during 1981/2-1984/5 to an average of 40% in 1989/90-1991/92,²⁷ rising official exchange rates raised the

26. Based on data provided by the Marketing Development Bureau.

27. Based on an internal analysis provided by the Marketing Development Bureau.

producer price from about TSh 5.7 per kg. of seed cotton in the earlier period to TSh 41 per kg. in 1990/91 and 70 per kg. in 1991/92. Total cotton exports recovered from 20,440 tons in 1984/85 to 61,598 tons in 1988/89 and stood at 56,473 tons in 1991/92, when cotton surpassed coffee as the country's number one export crop. Other crops showed signs of modest recovery in the late 1980s and early 1990s. In the aggregate, mixed performance in output terms combined with generally unfavorable world prices to produce a decline in earnings from the leading smallholder exports from US \$256 million, or 74% of the country's total export earnings in 1986, to \$196 million, or 54%, in 1992.²⁸

The early 1990s saw some tinkering with the export crop marketing system but little fundamental change. Following a series of studies on restructuring of the marketing boards in 1989, the boards were officially designated as the cooperatives' selling agents, rather than a purchaser of crops in their own rights. This reform had little effect, in part because the unions had only one possible "agent" through which to sell each crop, and thus no leverage over the terms of its transactions. Moreover, the tightening of bank credit which occurred just after this reform had a more dire effect on the unions than on the boards. In some cases, such as tobacco, boards made special arrangements to step in and purchase the crop for an insolvent union; in others, a union was able to continue purchasing only with special assistance from a board, turning the official agency relationship on its head.

Another ill-fated reform of this period was the decision to refrain from announcing official prices prior to the agricultural season. Both unions and marketing boards had suffered in some years from being required to pay an announced price which ultimately could not be covered due to falling world market prices or other

28. Marketing Development Bureau, 1992, p. 40.

factors. Instead of announcing a fixed price, it was proposed, only an "indicative price" would be circulated, a guess at the *ex post* price which could be used for planning purposes by both farmers and marketing organizations. Not surprisingly, the subtle distinction between a fixed and an indicative price was often lost on relevant Tanzanian actors. For example, in the 1991/92 season, the President went against the advice of the Ministry of Agriculture and announced to farmers that they would receive TSh 94 per kg. of cotton. The season saw a bumper harvest but with world prices lower than expected and the cotton-buying unions in financial crisis, the unions were generally unable to pay even the TSh 60 per kg. ultimately recommended by the government, leaving cotton farmers so disgruntled that the 1992/3 crop was expected to decline by over 50%.²⁹

One of the most damaging trends of the early 1990s and a noticeable flaw in the sequencing of reforms was the impact of the precarious financial positions of cooperative unions on producers' incentives. Their predicaments hurt producers by making input supplies less reliable and unavailable on credit, and by weakening the ability of the buyers to pay remunerative prices. The resulting need to finance input purchases with cash gave pause to many farmers given the inflationary environment, relatively low market prices, and the uncertain ability of the cooperatives to pay for the crops at the end of the season. Unions were also able to advance farmers only a limited first payment for their export crops, with hoped for final settlements being small or failing to materialize as the banks pressed their claims on the unions' export revenues.

29. The account given here is based on discussions with sources in the unions, the Marketing Development Bureau, and the Dar es Salaam diplomatic community.

A joint review of the agriculture sector by the World Bank and the Government of Tanzania, in preparation in 1993, ranked problems facing the traditional export sector as the highest priority for action. The review concluded that exports such as coffee, cotton, and smallholder tea could not be produced profitably under current conditions, but it placed the blame on the remaining 20% gap between the official and market exchange rates: "at 'market clearing' prices ... all traditional exports ... are profitable" it concluded. Complete decontrol of the exchange rate was in fact planned for late 1993. Equally importantly, the government passed legislation in August 1993 that in principle allowed for competition between private market agents and cooperative and parastatal organizations. To what degree real competition will ensue is the question of the day.

2. Road Rehabilitation

While Tanzania spans a vast area, its main population and production centers, as mentioned earlier, are located on or near its peripheries: Dar es Salaam on the Indian Ocean coast, Moshi and Arusha about 600 kilometers to the north near the Kenya border, the second-ranking urban center of Mwanza on Lake Victoria another 800 km. to the west, and the southern highlands including Mbeya near the Zambia border, a thousand kilometers southwest of Dar es Salaam. Such distances have made economic integration a costly process. Only an east-west route to Zaire and a few northern points were connected by rail in the colonial period. A rail line to the southwest and Zambia (TAZARA) was built at the height of the anti-apartheid struggle in the 1970s. Paved roads were largely limited to the Dar es Salaam-Arusha link and, from the late 1970s, a road paralleling the rail line to Zambia (the TANZAM highway). By the late 1980s, Tanzania's still inadequate system of trunk roads covered a total of 10,200 km., of

which 35% was paved. Adding 13,000 km. of regional roads brought the basic road network to only 0.02 kilometers of roadway per square kilometer of national territory.

Though the 1980s saw some important highway projects, including the Songea-Makambako and the Morogoro-Dodoma roads, the basic direction of change was one of decline. The existing road and rail systems were already far too big to be maintained using publicly budgeted funds, and the attitude of the authorities was one of neglect. "Since the 1970s," a recent government report concludes, "the amount of funds allocated for road maintenance has been less than one-third of the amount required."³⁰ As in its industrialization program, so too in its road development work Tanzania was installing new infrastructure that would be rendered unusable for lack of current inputs. In the Tanzania of the 1980s, one often preferred to drive over the smooth dirt track rather than endure the pot-holed remnant of a once-paved highway.

In a 1990 report, the World Bank estimated that only 24% of Tanzania's paved roads were in good condition, versus 76% in fair or poor condition. This compared to a 50% fair or poor share for Malawi, a 60% share for Zambia, and a 68% share for Kenya. Neglect of road and rail maintenance was economically irrational because it led to high expenditures on vehicle spare parts and repairs, correspondingly high transportation costs, and the discouragement of marketed production. High transportation costs raised the imports content of even domestic food production; for example, one estimate indicated that in 1968, for each \$100 worth of corn produced in Tanzania, \$68 of inputs were imported, most of this being used in the transportation sector.³¹ Another estimate by the World Bank put losses from higher vehicle operating

30. Shumbusho *et al.*, 1992, p. 1, paragraph 1.1. A similar World Bank document states: "Over the past decade ... Tanzania spent only 3-6% of its total public expenditures on roads, where 10-20% is normal for countries with far better maintained road networks." See World Bank, 1990, p. 5.

31. Marketing Development Bureau, cited in Bryceson, 1993, p. 83.

costs at about \$150 million a year in 1990, equivalent to about a third of Tanzania's export earnings.³²

To redress the neglect of the transportation sector, Tanzania and its international donors launched an Integrated Roads Project (I.R.P.) and parallel efforts to address railroad and port infrastructures in 1991. Funding for the I.R.P. was initially scheduled at U.S. \$871 million over eight years, of which \$791 million were to come from multilateral and bilateral development assistance. The I.R.P. aimed to bring 70% of Tanzania's trunk roads and 50% of its regional roads to good condition by 1995/96. Project estimates anticipated an economic rate of return of 24% with an annual savings on vehicle operating costs of "at least US \$80 million" (World Bank, 1990, p. 44). Although foreign governments and multilateral institutions would contribute the lion's share of I.R.P.'s cost, an important aim of the program was to shift Tanzania towards maintenance self-sufficiency by identifying new revenue sources, by improving the organization of relevant government departments, and by providing better incentives to relevant personnel.

Like most development initiatives in Tanzania, the I.R.P. could be understood as an agreement between a consortium of aid donors and key domestic decision-makers regarding what needed to be done and how to go about doing it. Joint agreement signalled that individual donor efforts would not be isolated, and that Tanzanian players would be held to their part of the understanding. Major repairs to the Dar es Salaam-Arusha road, to the TANZAM highway, and to the then deplorable roads in the city of Dar es Salaam itself were undertaken quickly, producing visible results. The emphasis being accorded to road rehabilitation was reflected in the fact that many regional

32. Staff Appraisal Report for the Integrated Roads Project, May 6, 1990, cited in Shumbusho *et al.*, 1992.

engineers offices were equipped with new computers, a rarity at their level of government, and determining the order of priority of proposed rehabilitation projects according to estimated economic returns gave work to at least some of this new hardware.

Some institutional impacts of the I.R.P. seem clearly positive. In 1993, a new fuels tax took effect, the revenue from which entered a Roads Fund that was to finance routine and periodic maintenance. Commitment to maintaining the Roads Fund to sustain current gains in road conditions appears strong. Neglect of transportation infrastructure has been replaced by refocused attention, and the morale of regional engineers seems to have been strengthened. Domestic construction firms are getting plenty of experience and should be able to carry out future projects with considerably less foreign supervision.

Evidence that the I.R.P. cannot solve Tanzania's transportation problems overnight is also easy to find. The decision to transfer government-owned road maintenance equipment to an autonomous hire company may have produced few benefits compared with a simple phasing out of engineering department control.³³ The majority of even paved trunk roads remain dangerously narrow, with fatal accidents an all too frequent occurrence on the busiest stretches linking Moshi and Arusha in the north and Chalinze and Dar es Salaam in the east. Even if they are achieved, I.R.P. targets will leave 30% of trunk roads and 50% of regional roads in poor condition in 1996. Arguably critical elements of a national network, such as an improved east west

33. In theory, regional engineers' offices would economize on the use of equipment if it had to be hired on a case by case basis at market prices. In practice, the transfer of equipment to the new hire company, PEHCOL, may have created large parks of under-utilized, older equipment while the private contractors who bid for the engineers' jobs prefer using equipment from other sources.

road connecting the southern parts of the country, remain difficult to justify on purely economic grounds.

Whether the I.R.P. touches more than peripherally on the transportation needs of most *rural* Tanzanians is also a big question. I.R.P. policy documents state that "[p]riority will be given to road failures affecting movement of agricultural supplies and produce" (World Bank, 1990, p. 36). However, it is the country's 10,200 km. of trunk roads and 13,000 km. of regional roads which are the I.R.P.'s focus, whereas an additional 32,300 km. of district-level roads connect this system to the rural areas where most Tanzanians live, with a still more vast expanse of dirt paths and tracks connecting their homesteads to the district roads. District engineers are reported to have been receiving less than 10% of the funding that would be required to maintain the district roads in recent years, and only 20% of the Roads Fund is to be available to maintain both district and municipal roads. As Lele (1993, p. 25) points out, "transport costs from regional headquarters to villages are often as high as those to regional headquarters from Dar es Salaam."³⁴ However, "[t]he level of support donors are already giving to the rehabilitation of trunk roads ... seems to make it difficult to mobilize additional support to the transportation sector." "This means that producers should expect depressed corn prices and high input prices at the farm level."³⁵

To assess and propose feasible ways of addressing these problems, the World Bank's Rural Travel and Transport Project has operated alongside the I.R.P., engaging some key decision-makers in organizing a set of district-level rural transport pilot projects. Preliminary studies carried out by these projects show that the vast majority

34. P. 25. Lele provides international comparisons suggesting that Tanzania's feeder road network is far inferior to that of similarly sized but more populous Nigeria, the feeder roads of which in turn compare unfavorably to those of India and far more unfavorably still to those of Western Europe.

35. *Op. cit.*, Pp. 43 and 25.

of transportation in rural Tanzania is accomplished by foot, and that "head-loading" by women accounts for about 73% of all transportation.³⁶ The typical rural dweller must walk several miles before reaching a road served by a scheduled bus service. No more than 25% of rural households own a bicycle, and these are usually controlled by men rather than by the women who bear the larger burden of transporting water, firewood, and foodstuffs. Ownership of donkeys and other animals used in transportation remains rare and is not part of the established culture in most of the countryside.

The pilot projects are focusing on three main strategies. First, efforts will be made to increase the use of "intermediate means of transportation," such as donkeys and carts. Second, emphasis will be placed on local organization to build and maintain feeder roads by labor-based methods. Third, attention will be given to ways of reducing demand for transportation, for example planting local woodlots to reduce the need to carry firewood.

An interesting question that is rarely addressed in the voluminous technical studies on Tanzania's rural transportation problems is whether the mid-1970s gathering of rural households into registered villages did anything to ease transportation burdens. To the extent that rural people are living and cultivating their crops in the villages established under government auspices in that period, transportation problems should have been eased, since there is a smaller number of points to be accessed by the feeder road system, and thus a smaller total length of roadway to be built and maintained. Moreover, villages tend to have been sited along existing roads which typically follow the high ground that is less easily damaged by weather conditions.

36. Ministry of Communications and Transport, 1993.

Insofar as proximity to schools and health centers is concerned, villagization has reduced transportation problems, since families reside within moderate distances from facilities located inside the villages themselves--a major reason rural people give for continuing to live at these sites. To be sure, the quality of most primary schools is questionable, and medicines seem available these days almost exclusively in mission and other nongovernment clinics, which many villages lack; but the situation in these sectors was no better before villagization.³⁷ A direct *negative* consequence of villagization, on the other hand, is that many farmers continue to work land in the more fertile valleys sometimes located several kilometers from their current homes. While access from the official homestead to district and regional roads may have been improved, there are therefore the added problems of transporting inputs to the fields and carrying crops back to the homestead. These factors also influence patterns of production--for example, chemical fertilizer tends to be used in fields closer to the registered village, while animal manure may be used in the more distant fields if village grazing restrictions lead to the animals being kept there.

Villagization has also accelerated the effects of population growth on the environment in ways that increase domestic transportation burdens. Denser, more permanent settlements more quickly exhaust nearby fuelwood supplies, making the gathering and carrying of wood from more distant points more commonplace. Villages were sometimes sited at greater distances from water sources, and subsequently installed piped water systems have typically failed for lack of routine maintenance and parts.³⁸ Overgrazing can result from increased concentration of sheep, goats, and cattle. As mentioned above, the Rural Travel and Transport Project is attempting to reduce villagers' burdens helping them to find local solutions such as the planting of

37. Some further discussion of the effects of villagization on rural welfare and attitudes will be found in Putterman, 1994.

38. See again Putterman, 1994, as well as Therkildsen, 1988.

woodlots. In sum, given this multitude of cross-cutting effects, the net effect of villagization on the ease or difficulty of rural transport remains unclear.

3. Spreading New Technology

For the most part, Tanzanian farming is an extremely low intensity affair making very little use of manufactured inputs. Although oxen are used in a few localities and a few farmers own tractors, the short-handled hoe is the only ubiquitous capital input. Most farmers use seeds from their last season's crop, and little or no chemical fertilizer or pesticide.³⁹ Spacing of seeds is casual, weeding is limited, and rainfall is the basic source of soil moisture. Even animal manure is used in limited quantities. In 1992/3, the average farm harvested about 1.4 tons of corn per hectare planted, up (somewhat inexplicably) from 0.7 tons in the late 1960s. These yields resemble recorded averages in such neighboring countries as Kenya, Malawi, and even Zimbabwe, but lag far behind world averages of 3.8 tons per hectare and the United States average of as much as 8.2 tons.⁴⁰ An average of 8 to 9 kg. of chemical fertilizer are used per cultivated hectare, lower than the African average of 10 kg. and far below the 49 kg. average for Latin America, the 116 kg. average in developing Asia, and the 98 kg. average for the world as a whole.⁴¹

39. According to Lele, 1993, p. 12, "only 10 percent of the area planted to maize was under improved maize seed in 1989 ... compared to 95 percent in Zimbabwe [and] 65 percent in Kenya".

40. According to the F.A.O. Production Yearbook 1992, Tanzania's average corn yield in 1979-81 was 1.3 tons per hectare, versus an all African average of 1.6 tons and averages of 1.4, 1.2, and 1.6 tons in Kenya, Malawi, and Zimbabwe. Averages for 1990-92 were 1.4 tons for Africa as a whole, and 1.3, 1.7, 0.9, and 12.0 tons, respectively, for Tanzania, Kenya, Malawi, and Zimbabwe. Due to weather fluctuations along with possible reporting errors, these figures vary enormously by year. The Yearbook reports an average of 7.5 tons per hectare for the U.S. and 4.5 tons per hectare for China during the three years 1990-1992, with the U.S. figure reaching 8.2 tons per hectare in 1992.

41. Lele, 1993, pp. 13-14.

The desirability, if not necessity, of more intensive forms of grain cultivation has not gone unrecognized in Tanzania over recent decades. Indeed, policy-makers recognized that if scattered residence patterns were to change to permanent village settlement in the country's less populated areas, extensive cultivation methods would have to give way to more intensive approaches. Thus, villagization was accompanied by a National Maize Program (Lele, 1992) in the 1970s, and significant quantities of chemical fertilizer and seeds were distributed through public channels in areas where villagization had changed residence patterns and where the maintenance of soil fertility by purely natural means appeared infeasible. Use of fertilizer was indeed popularized in what became the "Big Four" corn producing regions in the southwest part of the country, but yields still remained below potential due to such factors as poor timing of fertilizer applications.

Higher productivity is by no means unattainable in Tanzania. Farmers purchasing hybrid seeds, using chemical fertilizer and following spacing recommendations can obtain many times the yields of average neighbors. This was most recently demonstrated by the Sasakawa-Global 2000 (SG2000) Project, which began operating in Tanzania in 1989/90.⁴² In the 1990/91 season, project participants reported average corn yields of 4.9 tons per hectare on their one acre "management training plots" (MTPs) in three districts of Arusha region in northern Tanzania using 125 kg. of fertilizer, 25 kg. of hybrid seed, and TSh 1000 worth of insecticide.⁴³ Average corn yields of over 4 and in some cases over 6 tons per hectare were also

42. Sasakawa-Global 2000 is a joint project of the Sasakawa Foundation of Japan and of the Global 2000 program founded by former U.S. president Jimmy Carter. Under the direction of green revolution pioneer Dr. Norman Borlaug, the project has operated in a small number of African countries. The Tanzanian project incorporates the country's Ministry of Agriculture as a full partner, and is therefore formally known as the Kilimo-Sasakawa-Global 2000 project.

43. Quinones *et al.*, 1992.

recorded in a number of participating villages in Iringa, Mbeya, and Rukwa regions. In almost every case, plots using conventional methods obtained as little as a third or less corn per hectare than the MTPs.⁴⁴

Global 2000 seeks to demonstrate that the sorts of improved seeds and fertilizer that were responsible for "green revolution" yield increases in Asia can also benefit Africa, despite the fact that irrigation, the third leg of the revolution's technology tripod in Asia, is largely absent there.⁴⁵ Rather than developing new seeds and farming methods, the program attempts to disseminate the best available existing technology through improved extension methods and by assisting with the delivery and financing of input supplies. The program's startling yield achievements won many adherents, including the Tanzanian Prime Minister and the government of Finland, which became a significant financial backer of SG2000 during its second and third years of operation. On an annual budget of roughly \$1 million and with only three senior staff, the project reached about 10,000 participating farmers in 279 villages of 19 districts of 6 regions by its second year. However, the generalizability and sustainability of the program remained much in doubt, for reasons closely bound up with the marketing and infrastructural problems discussed earlier in this paper.

SG2000's success was partly due to a strong program of extension training. Operating within the Ministry of Agriculture, the project provided regional and district coordinators with motorized transport and prepared village-level extension agents to recruit and train participants. Agents grew in enthusiasm and dedication as their pride was bolstered by having genuine benefits to offer, as opposed to the usual ill-

44. *Op. cit.*

45. Less than 3% of Tanzania's cultivated area was irrigated in 1973 (Coulter and Lele, 1993, Table 4).

considered advice that farmers habitually ignored.⁴⁶ Management training plots of a full acre, rather than smaller trial plots, were adopted as a means of demonstrating the real costs and benefits of the technology, and of having an immediate and appreciable impact on family economies. In each village, only ten participants were recruited for the first season, with each typically asked to help recruit nine other farmers in the second year, and with perhaps half or more of the village participating by the third. Direct involvement by SG2000 was to end in the fourth year.

However, the most critical factor in the project's success, and also its most problematic element from the standpoint of sustainability, was the fact that it broke the logjams of poor input supplies and credit by delivering the recommended package to participants, initially on a 100% credit basis allowing interest-free repayment either in cash or kind at the end of the agricultural season. This facet of the program could be operated on a small scale only, given its limited budget and means of transportation (a single land-cruiser in each region). It helped to address problems of poor timing and inappropriate varieties and quality of inputs that frequently plagued small farmers.⁴⁷ Unfortunately, the delivery and credit functions of the program were becoming more, not less, critical to farmers as Tanzania's poorly coordinated reform process brought on the collapse of institutional credit and of input deliveries which had previously been handled by regional cooperative unions.

46. The extension system in Tanzania is routinely criticized for offering impractical or economically counter-productive advice. Extension workers have often been seen as low-level government workers who on the one hand lack the skill of master farmers, and on the other, have too little status to escape rural postings (as do luckier fellow bureaucrats).

47. Low germination rates for some supposedly improved seed delivered by the parastatal Tanseed led farmers to prefer imported varieties. The multinational firm Cargill entered the Tanzanian seed market in 1990 and seems poised to capture most of it in the near future. Timing issues are discussed in footnote 51, below.

In 1992 and 1993, private traders, with some encouragement from regional authorities and SG2000 staff, were gradually replacing the cooperatives' supply function. However, they could not profitably supply more remote villages in which demand at cost-covering prices was small.⁴⁸ More importantly, such traders would not supply fertilizer on credit. As remarked earlier, the cooperative unions had frequently supplied inputs at a cost to be deducted from subsequent crop sales proceeds, and the drying up of their own overdraft facilities had caused this practice to be curtailed. Noninstitutional credit seemed virtually nonexistent in most of the countryside, with an indication of acute credit hunger to be found in reports of well-off villagers buying crops from poorer villagers at harvest time for as little as half the price of sale in a neighboring regional center.⁴⁹

The credit problem was made more acute by the fact that just as the SG2000 program was reaching the withdrawal phase in the first group of participating villages, the Tanzanian government was engaged in a phased elimination of fertilizer subsidies, which were to go from 80% in 1990 to 55% in 1992 and to no more than 20% by mid-1993. The combined effect of devaluations and subsidy reductions tripled the price of fertilizer between 1990 and 1992.⁵⁰

Although the project initially enjoyed excellent repayment records except for cases in which drought conditions intervened, questions of credit supply, input price, and program sustainability came to the fore after the project villages in the first target district, Arusha's Arumeru, had "graduated" from the program. In view of high input

48. It might also be noted that there were still some controls on fertilizer retail prices, including government-set caps on transportation charges, that may have discouraged supply in such areas.

49. Such occurrences were reported in interviews with farmers in coffee-growing villages in Mbinga District, Ruvuma, and with maize farmers in Iringa Rural District, Iringa.

50. Coulter and Lele, 1993, p. 1.

and relatively low output prices, project organizers came to anticipate a high rate of reversion from MTP technology once farmers had to purchase inputs on their own. To reduce such attrition, they arranged for another U.S.-based NGO, TechnoServe, to organize farmers' associations in a number of the graduating villages, with the idea that the associations could become credit-worthy entities capable of supplying inputs on credit to individual members.⁵¹ Simultaneously, they worked with regional agricultural officers to entice private stockists to supply former participant villages. In practice, SG2000 remained in the business not only of guaranteeing loans to the village associations, but also of delivering some inputs in cases where the available channels (including the parastatal Tanzania Fertilizer Company, the private Tanganyika Farmers Association, and smaller private traders) failed to function.⁵²

In some Arumeru and in still more villages in Arusha's Babati district, word that SG2000 would pull out after its third program year led farmers to renege on third-year loan payments, since the termination of the project left them with little incentive to remain in its good graces. Fearing such outcomes, many extension agents, who bore responsibility for collecting these payments, avoided informing villagers of the program's schedule, leaving a good many participants surprised and demoralized when

51. The organization of these associations makes a fascinating story in its own right. Negative connotations of the term "cooperative" resulting from recent Tanzanian history caused the term "association" to be used. Tanzanians with long experience in rural programs predicted that the approach would fail because "peasants cannot trust one another with money" due to a long history of embezzlement and deception and to poor accounting capabilities. Religious factionalism and property disputes led to the collapse of two of the first six Arumeru associations.

52. TFC was notorious for late delivery and for distribution of inappropriate types of fertilizer. Coulter and Lele (1993) attribute this to the fact that most recent fertilizer imports have been aid grants the specifications of which are determined by the donor. Commercial imports depend on annual budget decisions regarding foreign exchange allocations, as the returns to importing fertilizer are not high enough to compete with more lucrative consumer good imports under own-funded and open general license import schemes. Even SG2000 has been unable to obtain required fertilizer inputs in at least one region and program year.

the program ended in their village.⁵³ To avoid such effects, to prepare villagers for the day when they would have to stand on their own, and to husband the limited program budget, a decision was made to require participants to pay half of the cost of the input package up front in the second year of operation in a given village, and to pay all of the cost up front in the third year. This, of course, had its own discouragement effect: with a rising fertilizer price, half the cost of the second year package was about equal to the just repaid full cost of the first year's. Participants joining in the third year enjoyed no credit benefits,⁵⁴ and generalization of the program to most households of a village became less likely, as a result.

Although 1993 saw SG2000 slated to operate for another six years in Tanzania, subject to funding and to suitable arrangements with the Tanzanian government by mid-year, the project's first director had departed and it seemed somewhat lacking in focus.⁵⁵ Rather than being the spearhead of a Tanzanian green revolution, SG2000 was in danger of becoming yet another dimly remembered foreign-funded project. As thoughtfully argued by Coulter and Lele (1993), however, the best hope for the project may lie in its ability to act as a catalyst of further and more appropriate policy changes. Having shown that high-yielding grain production can be achieved by ordinary farmers with the support of ordinary Tanzanian extension workers, the program has also

53. These statements are based on Johnson, 1992, and on the author's own interviews with villagers and project staff.

54. Note that the program was organized to spread the MTP package during three years in each village, but not to support each participating farmer for three years. Late joiners thus received inputs from SG2000 for only the one or two years remaining. It might be mentioned that SG2000 hoped to sustain a small number of demonstration plots in "graduated" villages, and that the project might also carry out other activities, such as training in oxenization and in crop storage methods, in those villages.

55. National and regional staff interviewed in September, 1993 talked of extending the maize MTP package to a smaller number of new adopters, while increasing oxenization and grain storage components. Experimenting with lower-input-requiring packages was also under consideration in view of problematic input and output price relationships. Given that this was a moment of reorganization and that some new decisions were perhaps waiting to be taken by higher levels of the organization, it is possible that the apparent lack of focus will be a transitional phenomenon, only.

pointed up the weak state of the country's input and credit supply systems after years of gradual and sometimes ill-coordinated reform. Coulter and Lele emphasize the importance of reducing transportation costs by giving more attention to rural feeder roads. They also argue that barring grain exports remains appropriate for the medium term, and that retaining some subsidy on fertilizer is therefore imperative if progress toward agricultural modernization is to be sustained.⁵⁶ An alternative position would be to argue that more exports should be allowed and even encouraged, so that grain prices would rise and render fertilizer use profitable even at market prices. Whether either approach would support more modernization without a revival of some means of extending credit to small farmers is probably the biggest question for the near future of Tanzanian farming.

4. Conclusion

The Tanzania of the early 1990s was clearly a different place from the Tanzania of a decade earlier. Goods were abundantly available in its shops, and the streets of Dar-es-Salaam were filled with newly imported automobiles belonging to cash-flush merchants. The streets of the capital and some of the main trunk routes had been

56. These authors oppose a pro-export approach on grounds that (a) while regions such as Rukwa were exporting to neighboring countries including Zaire, it would be difficult to capture the hard currency with which to import grain for Dar es Salaam, and (b) evidence of a significant volume of exports would disqualify Tanzania for food aid which might be needed in some years and sections of the country. Their argument regarding the necessity of subsidies is based on a sensitivity analysis and the idea that a 2-to-1 cost-benefit ratio is required to induce adoption. SG2000 in Tanzania had previously held that their original package was profitable under a wide range of price variations, but Coulter and Lele point out that benchmark output prices assumed in project sample budgets correspond to the c.i.f. price and are more than twice as high as prices paid by traders in villages. In my interview with the acting SG2000 director in September, 1993, it was admitted that the package was no longer sufficiently profitable under prevailing fertilizer and grain prices. It might be noted that the program's storage component partially addresses this issue, since farmers who can afford to store grain for at least a few months after the harvest are likely to receive a very large price premium.

repaired, new commercial buildings were rising and old ones were being refurbished. In the countryside, government monopolies and cooperatives were no longer much in evidence as buyers of food crops and suppliers of farm inputs. Inputs on credit were now available to only a few export crop producers, and the credit lines of the regional cooperative unions were largely dried up. Fundamental reform of export crop marketing institutions had yet to begin, but new legislation and government pronouncements suggested that liberalization would soon arrive in that sector as well.

The promise of agricultural revival could be seen in several omens. Food crop production rose dramatically between the early 1980s and 1988, suggesting a favorable response to liberalized marketing in that sector. Exports of nontraditional crops such as cut flowers and French beans were on the rise. Road rehabilitation and the easier importation of vehicles and spare parts promised reduced transportation costs. And farmers were responding to new technology packages with dramatically higher crop yields.

On balance, however, Tanzanian agriculture was witnessing modest growth at best. The rise in grain output was not sustained, and production incentives appeared dampened by a saturated domestic market. Private grain trade remained small scale and passing on transport costs to the producer further dampened incentives in less accessible areas. Rising input costs, nonavailability of credit, and the cash flow strains on small farmers facing rising prices of basic living needs were causing many to cut back on input use. And combined earnings from traditional export crops were down.

Improvements in the road network and easier importation of vehicles and spare parts have begun to make long-distance travel and communications cheaper and more reliable, but these changes coincide with others causing real costs to be reflected in

crop purchase and input supply prices. As a result, few if any farmers are experiencing windfall benefits, and those less accessably located are on balance worse off. In addition, road improvements rarely reach down to the village level, where the transportation burden of households, and in particular of women, is worsened by local scarcities of water, fuelwood, and even farm plots. While villagization has had some favorable effects on the availability of health and education services and has made it easier to bring roads to the villages, many villagers have to head-load more wood and water to their new permanent homes given their dearth at village sites. The short-term effect of villagization on rural transport thus appeared to be an ambiguous one.

An interim assessment of SG2000's efforts to diffuse improved seeds and fertilizer use in Tanzania is also sobering. While the project has convincingly proven that Tanzanian extension agents and farmers can be highly effective teachers and users of input-intensive farming methods, its impact is in danger of being nullified by unreliable input supplies, rising costs, saturated product markets, and the disappearance of institutional credit.

In part, the disappointing results of liberalization and related initiatives in agriculture could be attributed to deficiencies in policy and implementation. This is most obvious with respect to the traditional exports, where several years of tinkering with institutional details had left the single-channel system fundamentally unaltered. Unfortunate side-effects of the credit-squeeze on cooperative unions, policy vacillation with respect to those unions, and an unrealistic attempt to shift to an indicative pricing approach, may be other examples. However, even in the export crop sector, it is not clear that liberalization will necessarily produce growth of output, revenues, or quality. Depressed world market prices, high input costs, and high operating margins and limited competition among traders may mean that the producer is in no more profitable

a position after than before liberalization--a situation mirroring that now prevailing in the food crop sector. Liberalization may be a recipe for cutting the losses of public financial and marketing institutions, but the hope that it will also bolster production incentives may be ill-founded.

A possibility that this paper has not explored is that signs of an awakening of Tanzania's long-rumored agricultural potential are to be sought not among smallholders but among larger commercial farmers. As restrictions on landholding are relaxed and security of long-term leases grows, as equipment, parts, and commercial credit become more available to the larger private farmer, mechanized grain cultivation may attract an increasing number of individuals who have earned their initial capital in other trades.⁵⁷ Production of high-value horticultural crops for Europe and other markets will also attract more local and foreign business interests.

While the prospects for growth in the larger farm sector may well be bright, the growth of large-scale farms in areas lacking technical economies of scale should be viewed as a warning sign, not an indicator of success. Although real interest rates have certainly risen, bank loans are available to large borrowers only and at rates that are probably far below those that would clear the market. One must suspect that the profitability of mechanized grain production is to a substantial degree a function of modest interest rates to the large farmer combined with the credit starvation of smaller farmers which creates a large low-wage rural labor pool and large numbers of cash-starved farmers ready to sell their crops to rich neighbors at low prices.⁵⁸ To be sure,

57. Such private organizations as the Tanganyika Farmer's Association and the Southern Highlands Grower's Union have again become active in input and credit provision to larger farmers of late.

58. Such sales raise profits for the large farm operation by permitting the farmer to transport his own crop to the most advantageous market more economically thanks to his ability to "bulk up" with the produce of his neighbors.

credit rationing is a "natural" result of such market forces as the scale-sensitivity of loan management and the difficulty of establishing the borrower's credit-worthiness. That large farmers may be willing to adopt technologies falling far short of Coulter and Lele's 2-to-1 benefit-cost ratio is also to be expected given the advantages of large volume, and of the ability to both tolerate and diversify against risk. Yet, in the absence of scale economies in production, these forces may be leading to a net misallocation of resources, and when distributional and social costs are also considered, the case for government intervention--perhaps in the form of support for small farm credit schemes--may be overwhelming.⁵⁹

More generally, it would be both dangerous and unconscionable to write off the small farm sector, with its overwhelming importance both to national output and to the well-being of the mass of Tanzanians. What the evidence presented in this paper suggests is not so much that there is little prospect for improving the performance of the smallholder sector, as that such improvements cannot be expected to follow automatically from a withdrawal of government. As has been shown in other countries, in fact, there may be no substitute for a government role, if not in marketing, then at least in such areas as research and extension, and in the improvement of infrastructure. Government can help to monitor crop quality, and can assist self-help schemes to improve rural transport access. Government participation, whether by subsidies, guarantees, or some other approach, may also be desirable, on balance, with respect to the supply of inputs or the above-mentioned provision of small farmer credit. Finally, a thorough investigation of possibilities for promoting food

59. To be sure, identifying schemes that are cost-effective in an environment, such as Tanzania's, marked by limited administrative capacity, high supervision costs, and low trust among neighbors, would be a daunting challenge. The possibility that rectified cooperatives, once attaining viability in other operations within competitive markets, could be assisted to once again distribute inputs on credit is one that probably deserves consideration. But this takes us beyond the scope of this paper.

crop exports while finding alternative means to secure the domestic food supply may be the key to lifting the lid on Tanzania potential as a regional grainary.

References

Bates, Robert, 1981, *Markets and States in Tropical Africa: The Political Basis of Agricultural Policies*. Berkeley: University of California Press.

Bevan, David, Paul Collier, and Jan Willem Gunning with Arne Bigsten and Paul Horsnell, 1989, *Peasants and Governments: An Economic Analysis*. Oxford: Clarendon Press.

Bryceson, Deborah Fahy, 1993, *Liberalizing Tanzania's Food Trade: Public and Private Faces of Urban Marketing Policy 1939-1988*. Geneva: United Nations Research Institute for Social Development (in association with James Currey, London).

John Coulter and Uma Lele, 1993, "The Kilimo-Sasakawa-Global 2000 Project in Tanzania: A Mid-Term Evaluation Report," Atlanta: The Carter Center (mimeo).

Ellis, Frank, 1982, "Agricultural Price Policy in Tanzania," *World Development* 10: 263-83.

Ellis, Frank, 1983, "Agricultural Marketing and Peasant-State Transfers in Tanzania," Discussion Paper No. 116, School of Development Studies, University of East Anglia, March.

Food and Agriculture Organization of the United Nations, 1992, *F.A.O. Production Yearbook*. Rome: F.A.O.

Johnson, Bekki J., 1992, "Tanzania Kilimo-SG2000 Project Mid-Term Evaluation Trip Report," Atlanta: The Carter Center (mimeo).

Keeler, Andrew G., Grant M. Scobie, Mitchell A. Rendow and David L. Franklin, 1982, *The Consumption Effects of Agricultural Policies in Tanzania*. Prepared for U.S.A.I.D. by Sigma One Corporation (mimeo).

Lele, Uma, 1993, "Can Technology Transfer and Macroeconomic Adjustment Sustain Africa's Agricultural Revolution Without an Agricultural Sector Strategy? The Case of Sasakawa Global 2000 Program in Tanzania," International Working Paper Series 92-26, University of Florida.

Lofchie, Michael F., 1989, *The Policy Factor: Agricultural Performance in Kenya and Tanzania*. Boulder: Lynne Rienner.

Marketing Development Bureau, Tanzania Ministry of Agriculture, 1992, *Summary Review of Agricultural Marketing*. Dar es Salaam, September.

Ministry of Communications and Transport, United Republic of Tanzania, 1993, *Prioritization of Pilot Project Districts for the Rural Travel and Transport Project*. April.

Putterman, Louis, 1985, "Extrinsic versus Intrinsic Problems of Agricultural Cooperation: Anti-Incentivism in Tanzania and China," *Journal of Development Studies* 21: 175-204.

Putterman, Louis, 1986, *Peasants, Collectives, and Choice: Economic Theory and Tanzania's Villages*. Greenwich, CT: JAI Press.

Putterman, Louis, 1990, "Village Communities, Cooperation, and Inequality in Tanzania: Comments on Collier *et al.*," *World Development* 18: 147-153.

Putterman, Louis, 1994, "Relating Cultural Change and Economic Development: An Application to Rural Tanzania," unpublished paper, Brown University.

Quinones, Marco *et al.*, 1993, "The Kilimo-Sasakawa-Global 2000 Project in Tanzania: Annual Report 1990/91 Season," Dar es Salaam (mimeo).

Shumbusho, C.B., A.N. Temba, and F.B. Mtema, 1992, A Study on Road Maintenance Financing. (URT-Road Maintenance Initiative). Dar es Salaam, April.

Therkildsen, Ole, 1988, *Watering White Elephants*. Uppsala: Scandinavian Institute for African Studies.

World Bank, 1990, "Staff Appraisal Report: The United Republic of Tanzania Integrated Roads Project," Infrastructure Operations Division, Southern Africa Department, Report No. 8367-TA, May (mimeo).

World Bank, 1991, "Tanzania Economic Report: Towards Sustainable Development in the 1990s," Report No. 9352-TA.