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LESSONS AND CONSTRAINTS OF
EXPORT CROP-LED GROWTH:
COCOA IN IVORY COAST

Mathurin Gbetibouo and Christopher L. Delgado¹

Ivory Coast is exceptional in Africa by virtue of its highly successful, agriculturally-based growth strategy in the 1960s and 1970s. From the position of being relatively poor by African standards at independence, Ivory Coast had the highest gross national product per capita in sub-Saharan Africa in 1979, exceeded only by Gabon with its rich mineral deposits and tiny population. Without benefit of mineral revenues, foreign exchange was secured, capital accumulated, and employment generated, largely through expansion of the three principal commodity exports: coffee, cocoa, and timber. Well behind coffee in economic importance at independence, cocoa became Ivory Coast's major export commodity in the late 1970s. Since 1980, the country has been the World's largest producer of cocoa, with a 27 percent market share in 1982. Thus the story of the Ivorian "miracle" is hard to disassociate from the story of cocoa. The experience is rich in lessons and, perhaps, indicates the new difficulties and constraints that export-crop led growth strategies will have to face in the 1980s and 1990s.

One of the most striking aspects about Ivorian agricultural development policy at first glimpse is its apparent similarity to that of other countries in the region. Parastatal interventions in agriculture, predatory price policies that extract surplus from export crops to the benefit of nonagriculture, overvalued exchange rates, and subsidies for food crop production are the rule in Ivory Coast. Similar policies have been diagnosed, in a regional context, as being at the root of economic stagnation in sub-Saharan Africa (World Bank, 1981).

All of this leads us to two sets of questions that are the subject matter of this chapter. First, what is different about Ivory Coast? Why was agricultural development so successful when policies so heavily criticized elsewhere were followed? Second, will the same strategy continue to work in the future, or

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have internal and external economic conditions changed to the point where this is no longer possible? In the course of addressing these issues, we hope to illustrate both some concerns for the development of the cocoa industry in Ivory Coast and for African agricultural development generally.

To approach these issues, the chapter is divided into five parts. First, the role of export crops is explored in the context of Ivorian economy, with special reference to cocoa. Second, the role of the State in promoting cocoa development is examined, emphasizing differences vis-a-vis other African producers. Third, internal issues affecting the future of cocoa development are explored, with particular attention to relative incentives in the economy. Fourth, external issues are analyzed in the context of a stagnant world market and tough competition from Latin America. Finally, we conclude with some thoughts on research needs with respect to the internal issues and some desirable directions for policy with respect to the external ones.

EXPORT AGRICULTURE IN THE IVORIAN ECONOMY

Agricultural Contributions to the National Economy

One particularly intriguing aspect of the Ivorian economic experience is that an agricultural-oriented growth strategy has been associated with twenty years of declining importance of agriculture in the national economy. Coupled with high rates of overall growth, this serves to indicate the ultimate success of such a strategy and lends support to those theorists, such as Arthur Lewis, who have long argued that primary attention to agriculture is the most sustainable way to industrialize.

Table 1 presents some statistics: the share of agriculture in GDP declined from 43 to 26 percent from 1960 to 1979. The comparable GDP weighted averages for sub-Saharan Africa's eleven middle-income oil importers (including Ivory Coast) show an *increase* of the share of agriculture, from 30 to 36 percent over the same period. This is striking, since the weighted averages are heavily influenced by countries that have followed essentially proindustrialization growth strategies: Ghana, Zambia and Senegal.

At independence, 89 percent of the population in Ivory Coast was engaged in agriculture; this had declined to 79 percent twenty years later. As shown in Table 1, the sources of foreign exchange became steadily more diversified, largely due to deliberate government policy to reinvest export crop related surpluses in other ventures. Most importantly, physical productivity per agricultural worker grew at the rate of 4.4 percent per annum, putting Ivory Coast well ahead of the weighted average of 2.7 percent for middle-income oil importers in sub-Saharan Africa (World Bank,

TABLE 1 Indicators of the Role of Export Agriculture in the Ivorian Economy 1960-1979

	1979 Value	1960-79 Average Annual Growth Rate	Percentage Change 1960-79 (%)
GNP Per Capita (current \$)	\$1,040	2.4	61
Share of Agriculture in GDP	26	-2.5	-40
Share of Labor Force in Agriculture	79	-0.6	-13
Share in Total Exports of Three Principal Commodity Exports (of which cocoa)	68 (22)	-0.9 (0.0)	-19 (0)
Growth Rate of Agricultural Production (by volume)	—	3.8	—
Growth Rate of Agricultural Production (per agricultural worker)	—	4.4	—
Growth Rate of Agricultural Production (per capita total population)	—	-0.8	—
Growth Rate of Cocoa and Coffee Exports by volume	—	3.2	—
Net barter terms of trade	129	0.7	14

^a1976-1978 average.

Sources: Calculated from data in the statistical appendix of World Bank (1981), except for the share of cocoa in exports, which is from IMF (1982).

1981). Nonetheless, the 5.2 percent per annum growth in overall population over the period, due to massive in-migration from the North going largely to cities, led to an overall decline of agricultural production per capita of 15 percent over the period.

A close look at the net barter terms of trade between Ivorian imports and the principal commodity exports would probably show a decline in Ivory

Coast's position by approximately 25 percent between 1960 and 1983. Nevertheless, there was a net appreciation in Ivory Coast's favor of 14 percent between 1960 and 1979, which is important to bear in mind when assessing long-run outlook on the basis of current data. More importantly, the net income terms of trade, what total Ivorian exports will buy in terms of imports, grew by 7.8 percent per annum between 1960 and 1979 (World Bank, 1981).

The Role of Export Crop Surpluses in Public Investment and Resource Reallocation

The marketing of the major export crops in Ivory Coast—cocoa, coffee, cotton, and palm oil—is regulated by a parastatal organization, the *Caisse de Stabilisation et de Soutien des Prix des Produits Agricoles* (CSSPPA), hereafter referred to as the Stabilization Fund. The Stabilization Fund guarantees a fixed price to planters throughout the crop year and sometimes for several consecutive seasons. Unlike the marketing boards in other West African countries, the Fund does not take physical delivery of the crop. It only regulates internal marketing and issues licenses to exporters who are bound to sell at a price approved by the Fund. Exporters are also guaranteed a FOB price, which is on a cost-plus basis, reflecting the real costs of moving cocoa from producers to the shipping border, plus some margin fixed by the Fund. If the actual selling price on the international market is higher than the guaranteed CIF price, then the Fund retains the difference. If it is lower, the Fund makes up the difference to exporters, although this has rarely been the case.

The Fund typically generates a surplus as a result of its intermediary role in price stabilization. It is widely admitted that cash crop producers have been heavily "taxed" through the marketing board price support scheme. The extent of this taxation is measured by nominal protection coefficients, the ratios of domestic producer prices to the amount farmers would have received had the commodities been sold at the world price net of transfers and marketing costs, converted at a "real" exchange rate that reflects the true value of domestic currency. For Ivory Coast cocoa, the World Bank estimated a coefficient of .56 between 1971 and 1975, and .38 from 1976 to 1980 (den Tuinder, 1978 and World Bank, 1982). Abstracting from the fine points involving transport and handling costs, this implies that Ivory Coast cocoa farmers received 56 percent and 38 percent of the prices they would have received in absence of the marketing board over the respective stated periods.

The surpluses generated by these pricing policies were relatively massive during the 1977 to 1979 coffee and cocoa boom, as indicated in Table 2. In practice, these surpluses are used by the central government for

TABLE 2 Domestic Financing of the Ivorian Capital Investment Budget: 1965-1983

Year	Capital Investment Budget (BSIE) ^a (Billion CFAF)	Amount Financed From Domestic Sources ^b (Billion CFAF)	Share Financed Domestically ^c (%)	Stabilization Fund Surplus ^d (Billion CFAF)	Share of BSIE Financed by Stabilization Fund ^e (%)	Exchange Rate ^f CFAF/\$
1965-1966 avg.	14.5	13.6	94	0.5	10	246
1971	41.6	21.4	51	10.1	27	276
1972	34.9	16.6	48	-1.0	5	252
1973	36.9	18.2	49	5.9	—	223
1974	44.2	17.7	40	44.3	—	241
1975	54.0	27.5	51	19.6	15	214
1976	60.1	19.7	33	52.1	—	239
1977	245.0	196.5	80	243.8	—	246
1978	257.2	174.4	68	173.3	—	226
1979	219.7	135.2	62	162.5	—	213
1980	312.8	205.3	66	89.0	—	211
1981	271.3	65.1	24	35.8	—	271
1982	300.9	61.6	21	—	9	320
1983	224.2	39.8	18	—	0	350

Sources: 1965/67: den Tuinder. Other years: (a)-(c), *Marchés Tropicaux et Méditerranéens*, 21 January 1983, p. 136; (d) 1971-1975, den Tuinder, 1976-1981, *Ministère de l'Économie et des Finances*; (e) 1965-1975, den Tuinder, 1982-1983, *Marchés Tropicaux*, Op. Cit.; (f) IMF (1982) up to 1981, estimates thereafter.

^a*Budget Spécial d'Investissement et d'Équipement*.

^bIncluding, in addition to Stabilization Fund transfers, reserves of public enterprises, local saving, etc.

^cNet results of stabilization; not published after 1981.

^dFrom reserves plus current income.

^eMarket rate, period average. See "sources" for 1982 and 1983.

TABLE 3 Surpluses of the Marketing Board During the Cocoa Boom and Their Uses (Billion CFAF)

	1976-1977	1977-1978	1978-1979
Net surplus	243.8	173.3	162.5
Total transfers to other sectors and central government budget	238.0	171.8	162.3
Direct subsidy to agriculture	0.3	0.2	0.2
Addition to Stabilization Fund reserves	5.5	1.3	0.0
Percentage reinvested in the agricultural sector (%)	15.8	31.2	35.6
Percentage reinvested in other sectors (%)	84.2	68.8	64.4

Source: *Ministère de l'Agriculture*, 1982.

investment purposes, primarily outside export-crop agriculture. Table 2 only gives figures on the Capital Investment Budget, but the Stabilization Fund also makes transfers to public enterprise budgets and to pay for food production development projects, as in the case of rice in Northern Ivory Coast. As shown in Table 3, however, nonagriculture received the lion's share of each crop surplus during the boom years.

Thus the Stabilization Fund played the role of a major resource reallocator during the late 1970s. Had the surplus remained in the producers' hands, it is unlikely that it would have been used in the same manner. A review of recent Capital Budget (BSIE) expenditure shows that priority is typically given to creation of transport and urban infrastructure (*Marchés Tropicaux et Méditerranéens*, 1983).

Public investment is the major determinant of the direction of the Ivorian economy. It constituted more than 25 percent of GDP in 1978, a year exhibiting a real growth rate of 10 percent in domestic products (*Ministère de l'Economie et des Finances*, 1974). A period of decline set in after the cocoa and coffee price boom of the mid to late 70s. Starting with a 10 percent drop from 1977 to 1978, cocoa prices fell 25 percent between 1980 and 1981, to experience the steepest drop of a twenty-five year period. This series of declines can be correlated with subsequent poor performance of some macroaggregates. From 25.5 percent in 1978, the ratio of public investment to GDP fell to less than 14 percent in 1981, and the overall balance of payments deteriorated during these same years from a surplus of CFAF 90 billion to a deficit of CFAF 148 billion. The growth rate of domestic product slowed from 10 percent per annum in 1978 to 6.3 percent

in 1980, arriving at a net annual decline of 1.6 percent in 1981 (Ministere de l'Economie et des Finances, 1974).

COCOA EXPANSION AND THE DEVELOPMENT OF IVORIAN PLANTER INTERESTS

Historical Pattern of Cocoa Development

Cocoa was introduced into West Africa during the 18th century. The first plantation of cocoa in Ivory Coast was established in 1880. At that time, almost all estates were owned by Europeans. After a period of high prices triggered by the First World War, African planters took interest in cocoa cultivation and production expanded rapidly, starting in the Southeast: from 2,000 metric tons in 1922 to 55,000 in 1939. However, this production effort was frustrated by an embargo on exports during the Second World War. Cocoa output declined thereafter, but picked up momentum with the design of various government programs to increase production. The "cocoa boom" came in the late 1970s, when exports virtually doubled in five years. A chronology of Ivorian cocoa production and exports is contained in Table 4. The appreciable gap noted in Table 4 between production and exports is attributable to a small amount of local processing of beans, storage losses, and seasonal marketing problems explored later in the chapter.

The historical pattern through the 1960s is shared by most African cocoa producing countries. However, the recent boom in the Ivory Coast cocoa industry does not extend to other major African producers. Indeed, while Ivorian cocoa output increased from 180,000 metric tons in the 1970-1971 crop year to 262,000 in 1975-1976, and then to 412,000 in 1980-1981, the Ghanaian crop decreased for the same years respectively from 392,000 metric tons to 377,000 tons, and then to 258,000 tons in 1980-1981. The Nigerian crop declined from 308,000 tons in 1970-1971 to 214,000 tons in 1975-1976, and 155,000 tons in 1980-1981 (Gill and Duffus).

Rise of the Cocoa Bourgeoisie

Linked with the economic opportunities offered by cocoa and coffee culture, an African bourgeoisie began to appear in forest zone areas as early as the 1920s. Sawadogo notes that even a mediocre plantation of five hectares, with low average yields of 250 kg/ha, provided a greater income than that of the District Commissioner at the time. Civil servants, teachers, doctors, and other Ivorian professionals rushed to take advantage of the new opportunities offered for a minimal investment (Baulin, 1982).

TABLE 4 Production and Exports of Cocoa Beans in Ivory Coast 1919–1981 (000 metric tons)

<i>Year</i>	<i>Production</i>	<i>Exports</i>
1919	1	1
1922	2	2
1923	4	4
1930	22	22
1939	55	22
1940	46	46
1941	43	43
1942	28	28
1943	18	1
1944	14	14
1945	27	27
1950	53	62
1955	79	75
1960	62	63
1963	148	126
1970	181	143
1975	242	170
1980	400	310
1981	440	340

Source: Gill and Duffus (various issues).

In common with many areas of colonial Africa faced with worldwide depression in the 1930s, policies were instituted to discriminate against African smallholders. Sawadogo notes that African cocoa was classified as "wild" to permit collusion among purchasers to pay lower prices. Smallholders had difficulty in obtaining inputs, and bonus prices were allocated to holdings of over 25 ha, thus excluding 99 percent of African producers. Furthermore, European planters were able to use forced labor (Baulin, 1982).

These conditions provided the barb for political organization among the southern Ivorian planters, united in opposition to forced labor despite the fact that they were personally exempt. The struggle ended in the suppression of forced labor in all French colonies in 1946 after a battle royal led in the French National Assembly by a young deputy who was to give his name to the law: Felix Houphouet-Boigny (Sawadogo, 1980). Thus the history of cocoa in Ivory Coast is closely bound up with the creation of the *Rassemblement Democratique Africain*, an offshoot of which is still the ruling party in Ivory Coast. Membership of the latter, at the highest levels,

includes individuals with substantial cocoa interests. President Houphouët-Boigny, for example, maintains a cocoa farm of over 1200 ha in Yamoussoukro (*Afrique Agriculture*, June 1979).

Despite the press attention attracted to the very few large cocoa plantations in Ivory Coast, cocoa is overwhelmingly a smallholder product. The 1974 agricultural census showed that the average size of the nearly 225,000 farms which produced some cocoa in that year was 3.5 ha (*Ministère de l'Agriculture*, 1975). Furthermore, only slightly over one-fifth of these farms were ten ha or larger. Estimating the average smallholder household population (plus permanent hired labor) at seven persons, this implies that just under one person in five in Ivory Coast is directly involved in cocoa farming.

Recently, Gastellu and Affou Yapi have argued, on the basis of anthropological fieldwork, that there is a fundamental class distinction between owners of even large (50 ha or more) cocoa plantations that live on the farm and absentee landlords, for the most part urban people who have invested in cocoa. They argue that the farmers, whom they call "village planters," are not technologically, socially, or politically differentiated from smallholders. Thus they build a case that virtually all of Ivorian cocoa production is produced by a group of individuals that have little common class interest with urban-based political notables; businessmen and administrators that also gain financially from cocoa. Since there is a class-mediated conflict of interest between these two groups of planters in their view, their argument suggests that it is illusory to view the Ivorian power structure as a united front pushing the interests of cocoa development. In fact, there may be an asymmetry of interests, since the absentee ("bourgeois") planters benefit indirectly from nonurban agricultural policies, whereas rural owner-operators may not. Nevertheless, Gastellu and Affou Yapi's main point is that at the point essential for our purposes below: a great number of people in the Ivorian power structure, including those in urban areas, have a direct financial stake in the health of the cocoa industry at the producer level. This, we claim, is a significant difference between Ivory Coast and most other West African nations.

ROLE OF THE STATE IN PROMOTING COCOA DEVELOPMENT

Institutions

The very rapid expansion of cocoa production, despite consistently high rates of price taxation, is less a "miracle" than the result of a number of long-

term policies designed to promote cocoa development. Scientific research on cocoa has been carried out since colonial times, with an important and current direct input from the *Institut Français du Café, du Cacao et autres Plantes Stimulantes* (IFCC-GERDAT). Extension is the province of the *Société d'Assistance Technique pour la Modernisation Agricole de la Côte d'Ivoire* (SATMACI), a parastatal created along crop lines in 1963, in tandem with the Stabilization Fund. The original purpose of SATMACI was to promote coffee and cocoa, but it has since assumed regional responsibility for agricultural development in the forest zone. Specifically, SATMACI assists in disease control for cocoa, provision of subsidized fertilizers, and extension of high-yielding varieties. The 1976–1980 cocoa development plan allocated US \$77 million to direct SATMACI action and a \$240 cash subsidy to farmers for every new hectare planted in cocoa.

Thus several points in institutional organization stand out. Research has long been a priority and carried out in conjunction with efforts in other cocoa-producing countries. The extension function is distinct from the research function and has a definite crop orientation, yet the two functions are closely coordinated. Output marketing is independent of input supply, and in fact is entirely carried out by private entrepreneurs. As noted above, the Stabilization Fund functions as a regulatory body; all micro level marketing functions and decisions remain in private hands. This last point is in stark contrast to the marketing boards of Anglophone Africa.

Research Results and the Expansion of Production

Cocoa trees generally begin fruiting between three and seven years and yields begin to decline after 25 years. Yields vary principally according to plant material, disease and insect protection, age, and soil fertility (Liabeuf, *Agriculture*, June 1979). Technological progress in cocoa production in Ivory Coast has consisted primarily in improved insect protection, replacement of aging trees, and introduction of Amazonian hybrids, capable of increased photosynthetic activity given changes in farming systems and increased fertilizer use (Liabeuf, 1979). In fact, Ivory Coast is the only major African producer with a tree stock age pyramid wider at the base than at the summit, indicating substantial recent planting activity (Liabeuf, 1979).

Statistics on cocoa area are suspect in most producing countries. Ivorian figures were substantially improved by the 1974 agricultural census (*Ministère de l'Agriculture*, 1975). The survey showed that approximately 19 percent of the Ivorian cocoa tree stock in 1974 was 25 years or older, and 27 percent was five years or younger. Policy is for 90 percent of new plantings to be of the hybrid type by 1984–1985. Whereas only 4 percent of the total area planted to cocoa in 1974 consisted of hybrids, this figure had

risen to 14 percent by 1980 (*Ministère de l'Agriculture*, 1980). Since the hybrids begin production earlier and at higher levels, the impact of this policy on Ivorian output in the 1980s is indisputable.

Table 5 brings together the official statistics on area and yield growth for Ivorian cocoa in the 1960s and 1970s. As noted above, some skepticism may be attached to the pre-1974 figures and thus to calculated growth rates. Therefore the results in the table should be taken as best guesses, rather than firm facts. It is clear that the lion's share of expansion of production over the period came from extension of area harvested. Nevertheless, yields have risen appreciably (2.2 percent per annum on the average). This is in contrast to yield declines in the erstwhile major world producer, Ghana, where lack of disease control and aging tree stock are taking their toll.

Incentives Policies

As noted previously, cocoa pricing policy in Ivory Coast has generally been extractive. Table 6 shows that producers typically realized about half of the FOB Abidjan export price from 1960 to 1975. During the cocoa boom of the late seventies this proportion declined to one-third, as world prices soared, reaching a low point of 19 percent in 1977. As of this writing, the comparable ratio for early 1983 is 0.6 percent, due to the maintenance of a stable producer price and the slide in world prices (*Marchés Tropicaux et Méditerranéens*, April 15, 1983).

Ivorian price policies for cocoa during the latter 1970s had the appearance of much in common with other West African producers, as shown by the similarity in the reported nominal protection coefficients of Table 7. However, it is clear that incentives were, in fact, considerably higher in Ivory Coast than in the Anglophone countries due to a much less overvalued and fully convertible currency, an effect that may not be fully reflected in the "adjusted" NPCs for the Anglophone countries. Although data on cocoa smuggling is hard to come by, it is clear that substantial flows have come over the border from Ghana since the late 1970s, even up to the present time, despite harsh measures to police the Ghanaian side of the border since 1981. Nevertheless, it is clear that the main Latin American competitor, Brazil, has been able to subsidize incentives to its producers, due perhaps to lack of a comparable revenue imperative for taxing cocoa exports.

Because yields are very sensitive to application of chemical treatments and fertilizers, and because producers can reduce labor costs by harvesting only a portion of their holdings without harm to the trees, the price elasticity of supply in cocoa production can be surprisingly high for a perennial crop. As shown in Table 7, Ivory Coast has the highest such elasticity among

TABLE 5 Area and Yield Growth in Ivorian Cocoa

	Area under cocoa		Harvested/ planted	Production	Ivory Coast		Ghana		Brazil	
	000 ha.	Area harvested 000 ha.			Average Yields	kg./ha.	Average Yields	kg./ha.	Average Yields	kg./ha.
Average			%	000 m. tons	kg./ha.	kg./ha.	kg./ha.	kg./ha.	kg./ha.	kg./ha.
1960-1961-1964-1965	402.6	281.1	70	104.7	370	250	317			
1965-1966-1969-1970	495.1	357.2	72	147.0	410	—	—			
1970-1971-1974-1975 ^a	694.6	447.1	66	208.0	466	249 ^b	448 ^b			
1975-1976-1979-1980	924.4	583.8	63	297.3	510	214	636			
1960-1965-1975-1980	130%	108%	—	+184%	+38%	-14%	+101%			
1960-1965-1975-1980 ^c										
average annual growth rate	5.7%	5.0%	—	+7.2%	+2.2%	-1.0%	+4.8%			

^aThe Ivorian figures for 1974 and 1975 were revised following the 1974 Agricultural Census. Therefore the comparison of pre-1974 and post-1974 figures in the table should be interpreted with caution.

^b1973-1975 only.

^cMidpoint to midpoint (15 years).

Sources: Ivory Coast: *Ministère de l'Agriculture*, 1980. Ghana and Brazil: 1960-1975, FAO data from Lee; 1975-80 from *FAO Production Yearbook*.

TABLE 6 Ivorian Cocoa Price 1960-1980 CFAF/kg.

<i>Year</i>	<i>(1) Minimum Guaranteed Producer Price</i>	<i>(2) F.O.B. Export Price, Abidjan</i>	<i>(3) Ratio (1)/(2)</i>	<i>(4) Average Ratio</i>
1960	85	138	0.62	
1961	89	111	0.80	
1962	64	105	0.61	0.67
1963	64	113	0.57	
1964	70	117	0.50	
1965	70	86	0.81	
1966	55	105	0.52	
1967	70	132	0.53	0.45
1968	70	160	0.44	
1969	70	222	0.32	
1970	80	183	0.44	
1971	85	148	0.58	
1972	85	142	0.60	
1973	80	142	0.57	0.59
1974	110	303	0.36	
1975	150	245	0.61	
1976	150	391	0.38	
1977	180	968	0.19	
1978	250	725	0.34	0.34
1979	250	650	0.38	
1980	300	706	0.42	

Sources: Lee to 1974, unpublished figures of the stabilization fund.

TABLE 7 Comparative Price Policy Indicators for Major Cocoa Producers

	<i>Adjusted nominal protection coefficients</i>	<i>Long-run price elasticity of supply</i>	<i>Approximate 1980 world market share</i>
Ivory Coast	.38	.59	23% ^a
Ghana	.40 ^b	.126	23%
Nigeria	.50	.113	15%
Cameroon	.31	—	7%
Brazil	1.1	.54	10%

^a27% in 1982.

^bUnadjusted for overvalue exchange rate.

Sources: NPC's calculated by the World Bank as background for the *World Development Report*, 1982 except for Nigeria and Ghana which are estimated by the authors from project evaluation documents. The supply elasticities are from World Bank, *Commodities and Export Projections Division* (1982). The approximate 1980 market share is from the *FAO Trade Yearbook* (1980).

major cocoa producer. This suggests the need for caution in pursuing a positive price policy, in view of the large Ivorian market share and the aggregate price inelasticity of world demand. Ivory Coast may have reached the point where producer price increases become counter-productive with respect to aggregate national revenues, although further research needs to be done in this area.

One aspect of incentives policies that deserves attention, and is frequently overlooked, concerns provision by the State of marketing infrastructure to ensure that producers are able to sell all their output in a timely fashion. The policy of having marketing functions handled by private intermediaries ensures that the bureaucratic bottlenecks characteristic of marketing boards are avoided. Equally important, Ivory Coast has been, in relative terms, one of the world's great investors in roads, which now reach into every corner of the cocoa zone (den Tuinder, 1978). It is striking that in agriculturally-oriented Ivory Coast, agricultural services only accounted for 2.9 percent of central government functional expenditure in 1978, whereas roads accounted for 7.3 percent. The median proportions in Sub-Saharan Africa as a whole are 9 percent for agriculture and 5.5 percent for roads (World Bank, 1981).

Manpower Policies

In addition to administrative public entities, such as the Stabilization Fund, Ivory Coast has at least 19 state corporations such as SATMACI, that reach into every aspect of agricultural production. This has been singled out as a particularly common occurrence in Sub-Saharan Africa, and one that is increasingly criticized by outside observers (World Bank, 1981). Yet Ivory Coast is quite distinct in its efforts to alleviate the logical consequence of a skilled manpower intensive development strategy. Education, including university level training, has been the highest priority of the Ivorian government since independence. While not without problems, educational policy in Ivory Coast over the last twenty years has been primarily directed to alleviating the skilled manpower constraint (den Tuinder, 1978). Furthermore, the government has not hesitated to use expatriates to fulfill the need for professionals and managers *en attendant*. The number of French technical assistants doubled between independence and the mid-1970s. Furthermore, Europeans, Syrians, and Lebanese have been estimated to constitute 2.5 percent of the population in 1975, occupying many managerial positions in the skilled professions, commerce, and administration (den Tuinder, 1978).

On the other hand, rapid expansion of agricultural production based primarily on acreage expansion has aggravated the unskilled labor constraint prevalent in Ivory Coast, as in most African economies. Low paid migrant workers were encouraged to come to Ivory Coast by the government in order to keep labor costs down (Sawadogo, 1980). This group accounted for almost 30 percent of the population in 1975, and most certainly a higher percentage of the agricultural labor force (Lee, 1983).

Thus by deliberate attention to nonprice policies favorable to agriculture, the State has played a vigorous role in promoting export crop agriculture over the last twenty years. These nonprice policies have consisted of institutional experimentation in mixing private and public decision-making, agricultural research, extension, roadbuilding, and manpower policies designed to improve the quality of managerial decision-making, while keeping unskilled labor costs relatively low. Whereas many other African nations have also been quick to tax export agriculture, it is an open question as to whether their nonprice policies have been as favorable to its expansion. The next section will explore some of the internal issues affecting the future of export crop agriculture in Ivory Coast, the principal one of which may be the attempt to apply the same sort of interventionist strategy to other sectors enjoying less of a comparable advantage.

INTERNAL ISSUES AFFECTING THE FUTURE OF COCOA: RELATIVE INCENTIVES AND EQUITY

Trade-offs Between Food and Export Crops at the Producer Level

Since the late 1970s, concerns have been expressed both inside and outside the Ivorian government that cocoa and coffee farmers had begun shifting resources out of traditional export commodities and into food crop production, in which Ivory Coast presumably has less of a comparative advantage. Maintaining the internal terms of trade of agriculture in favor of cocoa in the forest zone may have been one of the principal motivations for raising the guaranteed producer price to 300 CFAF in 1980, and for maintaining it since then in spite of sliding world prices.

In any event, examination of acreage and production data for the principal cocoa-producing zones in 1980 shows little reason for concern on this score with respect to the future of cocoa production, although other questions could be raised with respect to food policies. As indicated in Table 8, cocoa acreage and production shot up by 60 and 66 percent, respectively, in the late 1970s. However, the major food crops did not do nearly as well. Although area harvested increased at the probable (but unknown) rate of population increase in the zone, production per capita in 1980 was almost certainly lower than in 1970. Even allowing for the influence of using a year of poor yields as an endpoint, it is still clear that the relative importance of cocoa in forest zone farming systems increased during the late 1970s. In fact, more recent setbacks in cocoa output in the early 1980s may be attributable to farmers giving increased attention to food crops and less to cocoa, but the data to measure this are not yet available.

Examination of available price data confirms the plausibility of the results in Table 8. Table 9 shows that the nominal producer price of cocoa increased faster after the 1970s than did those of all major food crops, with the exception of plantain. Since plantain is typically grown in association with cocoa, relatively higher prices for this crop may constitute an incentive to divert labor away from the export commodity, other things being equal. With respect to field crops such as maize and yams, calculations of net returns per man-day made in the mid-1970s show that cocoa returns are five to ten times higher than returns to these crops. Only irrigated rice with subsidized mechanization and subsidized producer prices comes anywhere close to equality with low-yielding "traditional" cultivation of cocoa (den Tuinder, 1978). However, increases in production costs and a decline in output price for rice since then makes even this activity a poor second-best, especially in the context of dynamic technological progress in cocoa production.

Intersectoral Trade-offs: Agriculture vs. Nonagriculture

The indexes in Table 9 do serve to indicate a major shift in market incentives that may have serious implications for cocoa. The Abidjan "African" consumer price index (CPI), however unsuited to the task, may be the best measure available to deflate nominal agricultural prices in order to examine the terms of trade between agriculture and nonagriculture. A comparison of the producer price index for cocoa with the CPI shows that there was more than a 20 percent decline in the real producer price of cocoa between 1975 and 1980, even though there was a one-third improvement in favor of cocoa between 1970 and 1975. Assuming that inflation since 1980 has continued at about 10 percent per annum and given that the producer price of cocoa is unchanged, the real producer price of this commodity in 1983 is only 60 percent of its 1975 value.

On the cost side, the price and labor situation up through the cocoa boom was such that growing urban demand for labor did not adversely affect cocoa producers. Output prices for cocoa were rising rapidly and the steady flow of labor from poorer areas in the North kept labor costs down. Table 10 shows that the ratio of cocoa output prices to wage costs more than doubled between the late 1960s and the late 1970s. However, the situation has turned around since then, due to both a stagnant producer price and a rapid rise in the cost of labor, which increased 28 percent between 1978 and 1980, and is probably about 80 percent above 1978 levels as of 1982 (based on an estimated 600 CFAF/day wage rate). If correct, the current ratio of cocoa producer prices to wage rates is back to 1960s levels and falling.

The primary explanation of increases in the cost of agricultural labor appears to lie in competition with urban areas. During the early to mid-1970s, nonagricultural wages increased from about three times as high to about four times as high as agricultural wages (den Tuinder, 1978). As the urban sector begins to account for a relatively larger share of the labor force, it is likely that this gap will decrease, due to both increased competition for work among the urban unemployed and more widespread upward pressure on agricultural wage rates as workers leave or prefer to migrate directly to Abidjan from northern areas without stopping in the cocoa zones. The 8 percent per annum rate of urbanization in Ivory Coast tends to support these conclusions.

The likelihood that these trends will continue, to the detriment of export crop agriculture, is increased by a series of fundamental policy changes implemented in Ivory Coast during the 1970s. As argued by Michel and Noel, the 1973 tariff reform and subsequent imposition of a host of protective import quotas was a new departure in industrial protection. In effect, there appears to have been a shift in development emphasis from export-crop growth strategies towards import-substituting industrialization behind tariff

TABLE 8 Relative Performance of Cocoa and Food Crops in Major Ivorian Cocoa Areas^a

	1970 ^b	1975	1980	% Change ^b 1970-1980	% Change 1975-1980
<i>Area Harvested in Major Cocoa Districts</i>					
(000 ha.)					
Rice	112	174	223	98%	28%
Maize	122	273	339	117%	24%
Yams	115	166	199	74%	20%
Rice, Maize and Yams combined	349	612	760	118%	24%
Cocoa ^c	387	471	752	94%	60%
<i>Production in Major Cocoa/Districts</i>					
(000 ha.)					
Rice	145	217	209	44%	-4%
Maize	102	125	145	42%	16%
Yams	1,139	1,595	1,559	37%	-2%
Cassava	413	715	861	109%	20%
Plantain	540	970	1,004	85%	3%

All major food crops above		2,342	3,623	3,777	61%	4%
<i>Average Cereal Yields in Major Cocoa Districts^a</i>						
(kg./ha.)						
Rice	1,290	1,250	940	— ^e	—	—
Maize	840	460	430	—	—	—
<i>Average Cereal Yields Nationally^d</i>						
Rice	1,090	1,270	1,110	—	—	—
Maize	710	520	430	—	—	—

^aMajor cocoa areas are defined as those administrative departments that produced at least 10,000 metric tons of dry cocoa beans during the 1979-1980 season. This classification includes the Abengourou, Abidjan, Adzopé, Bondoukou, Bouaflé, Bouake, Daloa, Dimbokro, Divo, Gagnoa and Sassandra administrative units.

^bThe 1970 data may not be fully comparable to years after 1974, since the first detailed national census of agriculture occurred in that year.

^cIncludes all Ivorian cocoa. The major cocoa districts retained here accounted for 93 percent of Ivorian cocoa area cultivated in 1980.

^dComputed from data in the table.

^eNot given since trends in yields between two single years are particularly misleading.

Source: Compiled from disaggregated data in *Ministère de l'Agriculture* (1980).

TABLE 9 Major Agricultural Price Movements 1970-1980

	Abidjan Region Retail			1980 National Retail (season/location)		
	1970	1975	1980	Lowest	Average	Highest
<i>Rice</i> (millet)	74	110	128	121	136	162
CFAF/kg.	67.3	100.0	116.4	—	—	—
Index						
<i>Maize</i>	42	73	98	50	72	113
CFAF/kg.	57.5	100.0	134.2	—	—	—
Index						
<i>Yams</i> (late)	36	51	74	48	68	88
CFAF/kg.	70.6	100.0	145.1	—	—	—
Index						
<i>Cassava</i>	34	54	45	16	29	48
CFAF/kg.	63.0	100.0	83.3	—	—	—
Index						
<i>Plantain</i>	22	33	62	19	51	84
CFAF/kg.	66.7	100.0	187.9	—	—	—
Index	45.7	100.0	171.4	—	300	—
<i>Cocoa</i> (Index of Producer Prices)	63.3	100.0	100.0	—	150	—
<i>Coffee</i> (Index of Producer Prices)	69.7	100.0	215.7	—	—	—
<i>Consumer Price Index</i> (Abidjan, low income)						

Sources: den Tuinder 1978; Ministère de l'Agriculture, 1980; IMF, 1982.

TABLE 10 Major Changes in the Cost of Agricultural Labor 1961-1980 (current CFAF/day)

Year ^a	Indices									
	Minimum Agricultural Wage		Actual Agricultural Wage, Major Cocoa Producing Areas ^b		Abidjan African Consumer Price Index	Cocoa Minimum Produce Price	Minimum Cocoa Wage, housed and fed	Minimum Timber Wage, not housed or fed	Actual Agricultural Wage in Cocoa Zones ^b housed and fed	
	Cocoa, housed and fed	Timber, not housed or fed	housed and fed	not housed or fed						
1961	156	302	—	—	33	36	57	59	—	—
1963	156	320	—	—	33	26	57	62	—	—
1968	156	320	—	—	38	28	57	62	—	—
1970	156	290	—	—	43	32	57	56	—	—
1973	160	325	—	—	48	34	58	63	—	—
1974	200	356	—	—	56	44	73	69	—	—
1976	250	424	—	—	69	60	91	82	—	—
1977	250	445	—	—	89	72	91	86	—	—
1978	275	516	328	488	100	100	100	100	100	107
1979	275	516	351	523	116	100	100	100	100	128
1980	275	516	420	622	134	120	100	100	100	—

^aWage rates are for end of period; other items are period averages.

^bAverage of rates reported by extension agents in the administrative districts of: Abengourou, Abidjan, Aboisso, Adzope, Bondoukou, Boufie, Bouake, Daloa, Dimbokro, Divo, Gagnoa, and Sassandra.

Sources: Compiled from data in *Ministere de l'Agriculture*, 1980 and Table 6.

barriers. In addition to implications for investment priorities and other direct policies, such a shift would have important consequences on incentives to produce cocoa. This would occur through market processes, akin to the labor and price trends described above, that shift a higher proportion of national resources into nonagriculture than would have been the case otherwise. Other things being equal, outputs in the relatively efficient cocoa sector are shifted to less efficient sectors, where world prices are taken as true opportunity costs for the purpose of determining efficiency. In other words, the relative incentives between cocoa and manufacturing have shifted in favor of the latter to the detriment of the former. An issue, then, that needs further research is how reducing effective taxation of cocoa production can correct the "distortion" without unduly harming other policy goals.

Interaction Between Cocoa Growth Strategies and Equity Considerations

The trade-off between growth and equity is one of the perennial debates in development economics, particularly in the context of export crop growth. In this regard, it is useful to distinguish four concepts of equity: interpersonal, regional, sectoral, and absolute. Interpersonal equity concerns the economic differentiation of individuals and is properly investigated using such measures as the size distribution of personal incomes. Regional equity is defined to encompass the host of concerns felt by governments with respect to the distribution of wealth in different geographic areas of the country. Sectoral equity means the relative positions of agriculture and nonagriculture, whereas absolute equity is taken to mean the chance for an individual to realize his or her highest opportunities. Alternately, absolute equity could be defined as interpersonal equity defined across national borders, at least certainly when discussing relatively poor African farmers.

Sectoral and absolute equity considerations are likely to be the most important long-run issues in promoting Ivorian cocoa development, especially if the trends outlined in the previous section persist. Nevertheless, policy attention for the foreseeable future is likely to be focused on interpersonal and regional issues. We shall accordingly confine our attention to these two sets of questions in assessing the implications for future cocoa development.

Writers concerned with interpersonal equity in Ivory Coast tend to focus on income differences among specific groups of people, such as forest zone smallholders. Thus Lee argues that cocoa-based growth strategies have been achieved at the cost of increased social and economic differentiation arising from the creation of an elite of larger farmers employing hired labor.

Lee correctly argues that the World Bank estimates of agricultural income distribution (den Tuinder, 1978) are, in fact, measurements of

differences in income per capita in different administrative districts. They do not convey information about the size distribution of personal incomes, and should not be used to make inferences about income inequality across households within any given area. Therefore, Lee falls back on "partial indicators" of rural inequality, principally the size distribution of landholdings in Southern and Northern Ivory Coast, based on 1974 agricultural census data. He calculates a Gini coefficient of 0.450 for Southern Ivory Coast in this regard, which by implication is synonymous with the forest zone. This coefficient is found to be "a high figure [denoting greater inequality] compared with those of most Sub-Saharan African countries for which estimates are available, as well as some Asian countries . . ." (den Tuinder, 1978, p. 114).

In fact, this measure of income inequality is totally inappropriate to areas with large amounts of unused land, as was the case in Ivory Coast in the mid-1970s. Larger farms tend to be associated with larger families. Although Lee does note this latter fact he does not formally incorporate it into his calculations. Table 11 contains reworked calculations of Lee's data to estimate the size distribution of farm income per capita in the forest zone. This necessarily involves some simplifying assumptions. Average family size in each land size category is substituted for actual household family sizes. Household income is assumed to be equally shared by household members. Furthermore, the income groups chosen probably include significant income disparities within them, as in the case of two versus 4.9 hectare farms. Finally, income includes imputed subsistence income, which is hard to measure. Nevertheless, the conceptual improvement is felt to justify losses in precision.

The data in Table 11 yield an estimated Gini coefficient for the size distribution of personal farm income of 0.105, indicating a comparatively high degree of equality in the forest zone. Given the bias that can result in this form of calculation from using income bands that are too wide, Lee's more disaggregated data on the size distribution of landholdings was reworked in the larger land size categories of Table 11. The results show only a very small decline in the estimated Gini coefficient, from 0.45 to 0.43.

The question therefore arises as to why income distribution within forest zone farms appears to be so much more equal than the distribution of landholdings. The definitive answer to this puzzle must await further microeconomic fieldwork. However, Lee's data suggest an answer that provides guidelines on further work. Farms of under two hectares are seen to have land/labor ratios of the order of one-third hectare per agricultural worker. The comparable ratio for farms over 10 hectares exceeds two hectares per worker. Thus it would seem that small farms are worked much more intensively. While this may at first suggest land scarcity, it is also consistent with relative labor scarcity. Some farmers prefer to cultivate a

TABLE II Rough Measures of Farm Income Distribution in the Ivorian Forest Zone

Size of Landholding (Ha.)	Distribution of Farms (%)	Distribution of Resident Population (persons)	Distribution of Population (%)	Cumulative Population (persons)	Cash Income Per Capita by Farm Size (CFAF)	Cumulative Income (million CFAF)	Cumulative Distribution of Income (%)	Cumulative Distribution of Population (%)
0.0- 1.99	24	588,600	16.5	588,600	9,622	19,201	9	16
2.0- 4.99	37	1,158,240	32.0	1,746,840	25,000	74,797	34	48
5.0- 9.99	27	1,066,420	29.5	2,813,260	44,633	146,923	66	78
10.0-19.99	10	619,040	17.0	3,432,300	59,236	197,830	89	95
20.0-99.99	2	189,040	5.0	3,621,340	114,824	222,926	100	100

Gini coefficient: 0.195.

Source: Calculated from "Unpublished estimates, *Direction du Plan*", given in Lee, Table 35.

small area of high-value crops intensively, while others form a larger area extensively. Both may in fact have similar incomes. In sum, the available data are not consistent with the view that there is substantial income inequality among farmers in the forest zone. The major qualifier, of course, is that heads of larger households may carry disproportionate economic and political influence; this is akin to the distinction between managerial and ownership power in the industrial world.

Despite the relative equality of income within forest zone farming areas, major differences between personal wealth in the North and South of the Ivory Coast is likely to have important implications for the future of cocoa development. Lee reports a 1981 estimate of as high as 7 to 1 for the ratio of average incomes between the two areas, although this is undoubtedly on the high side, due to the disproportionate influence of Abidjan. Ivorian government policy has stressed redistribution of income from forest to savannah zones for some time. This essentially takes the form of directly taxing coffee and cocoa production and earmarking the proceeds for development of agriculture and agroindustry in the North.

The southern crops of cocoa and coffee accounted for over 90 percent of government tax receipts from agriculture in the 1980–1981 crop season, not including the surplus generated by the Stabilization Fund, as shown in Table 12. Direct export taxes on cocoa were equivalent to about one-third to one-quarter of payments to producers in the mid-seventies (den Tuinder, 1978). Sugar, cotton, and rice accounted for 93 percent of government subsidies to agriculture in 1980–1981. Sugar and cotton are grown entirely in the North; the main focus of government attention to rice production is also there.

It can be argued that the source and use of government funds are two largely separate entities, therefore the data in Table 12 are not relevant to the impact of cocoa production on equity or of equity concerns on the future of cocoa. However, it is clear that the transfer of income from cocoa and coffee to sugar, cotton, and rice is a conscious objective of Ivorian policy, and thought of in this manner. Furthermore, it is also clear that the overriding objectives in promoting the last three crops are to provide a source of income to the North; diversification and increased food production are only secondary objectives. Therefore, the evolution of policy with respect to high cost domestic sugar and rice production cannot fail to be of interest in assessing probable policies towards cocoa. In this sense, regional equity considerations are likely to severely constrain cocoa production policies, be they price or direct intervention based.

This is especially true today, with lower world prices for the southern export crops and the fact that a major agroindustrial infrastructure for sugar is now in place in the North, requiring a high recurrent subsidy from the central government. Ivorian sugar production was 168,000 tons during the 1981–1982 season, of which 108,000 tons were exported during the first

TABLE 12 Government Balance Sheet for Major Agricultural Projects in 1980/81 (in million CFAF)

Products	Tax Receipts	Percentage of		Subsidies	Total Subsidies	Balance
		Tax Receipts	Total Tax Receipts			
Coffee	43,136	45	—	—	—	43,136
Cocoa	44,712	46	—	—	—	44,712
Cotton	6,826	7	8,856	18	18	-2,030
Palm oil	792	1	792	2	2	0
Coconut	538	1	264	—	—	274
Fresh Pineapple	381	—	734	2	2	-353
Canned Pineapple	—	—	859	2	2	-859
Banana	264	—	694	1	1	-430
Sugar	—	—	29,210	61	61	-29,210
Rice	—	—	6,749	14	14	-6,749
Soybean	—	—	92	—	—	-92
Total	96,649	100	48,250	100	100	48,399

Source: *Ministere de l'Agriculture*, 1982.

nine months of 1982 at the average price of 57.4 CFAF/kg., substantially below production costs (*Marchés Tropicaux et Méditerranéens*, April 22, 1983). The future of cocoa production may depend upon delinking cocoa and sugar policies.

In sum, the rising relative value of foodstuffs such as plantain, increases in labor costs and shifts in the intersectoral terms of trade against agriculture, and discriminatory policies motivated by regional equity concerns all raise questions with respect to the sustainability in the 1980s and 1990s of export-crop led growth of the type provided by cocoa in the 1970s. Two items could turn this situation around. First, bright prospects for technological change in Ivorian cocoa production could substantially improve the relative profitability of cocoa cultivation. Second, a significant rise in the relative world price of cocoa would have the same affect, *ceteris paribus*. The next section investigates the external issues facing Ivorian cocoa production, raises some serious concerns in this respect, and provides the framework for some operational recommendations with respect to future cocoa export strategies.

EXTERNAL ISSUES AFFECTING THE FUTURE OF IVORIAN COCOA: INCREASED COMPETITION FOR A STAGNANT MARKET²

A Stagnant World Market, the International Cocoa Agreement, and Lack of Producer Cooperation

The world cocoa market is dominated by a small number of sellers and purchasers. Aggregate demand is price inelastic in most importing countries, of the order of 0.3 (Gbetibouo, 1982). This a minor stock decline of 29,000 metric tons in 1975–1976 was the main influence on the doubling of world prices in 1976–1988. Conversely, supply increases from good weather or technological change severely depress both world prices and producer revenues. Thus, there was an historically high excess quantity of beans of 148,000 metric tons in 1979–1980, setting the pace for a gradual decrease in real prices to their current low levels. This situation provides a powerful incentive to producers to attempt to limit world supply, driving prices up.

Capriciousness of supply and inelasticity of demand combine to give cocoa prices the highest degree of instability among the major commodities surveyed by UNCTAD. This fact has motivated attempts to regulate and stabilize the world cocoa market. One such attempt is the International Cocoa Organization (ICCO), bringing cocoa producing and consuming countries together for the purpose of signing and implementing a pact, the International Cocoa Agreement.

Three agreements have been signed since 1972. The Ivory Coast signed the 1975 agreement reluctantly, and refused to sign the current one on the grounds that the floor intervention price was too low and that, as the Ivorian Minister of Agriculture put it, the price adjustment scheme "held the germ of speculation" (*African Business*, January 1981). There was a clause in the original agreement stipulating that countries representing at least 80 percent of the market had to sign before the pact entered into force. Without Ivory Coast, 23 percent of the market at the time of signature, the agreement could not be operative.

The Ivory Coast still could not be persuaded to join after many attempts in this vein from other cocoa market participants, producers and consumers alike. Therefore, the agreement was signed anyway without the participation of the world's largest producer. On the import market side the world's leading buyer, the United States, also refused to participate on the grounds that the floor intervention price was too high. However, the absence of Ivory Coast in the current agreement probably has more to do with the current difficulties of the agreement than the absence of the United States (Kirschen, 1983). In 1980, the average (ICCO) market price was \$1.18/lb and in 1981 it was \$.94/lb. In June 1981, just before the third agreement was signed, prices were as low as \$.75/lb. When traders anticipated the entry into force of the pact in September of the same year, prices jumped to \$1.06/lb based on a planned floor intervention price of \$1.00/lb. Later, when traders realized that the agreement was not going to be effective without the participation of Ivory Coast, and without enough money from the buffer stock management to buy up the surplus, prices fell back to their previous level, reaching \$.79/lb in 1982.

During the previous two agreements, market prices never went outside the intervention price band, hence the effectiveness of the ICCO had not been tested. The organization was able to accumulate \$230 million from the export levy paid by member countries. The buffer stock manager used the money to purchase 100,000 metric tons of cocoa and thus push prices up to a modestly higher level. However, more money was needed to soak up an estimated 210,000 tons excess supply. Ivory Coast, which had contributed over \$30 million to ICCO previously, was no longer a member and was threatening to withdraw financial participation. In view of the visible financial difficulties facing buffer stock management with respect to buying excess cocoa, prices went down further.

Besides less money for the ICCO and its price support activity, the absence of Ivory Coast from the agreement means lack of leadership on the producer's side. An influential trade journal reported:

Oddly enough, during the life of the preceding Agreement, and despite the Ivorian-Brazilian frictions, the producers seemed orientated and gener-

ally united on what they wanted. That what they wanted was beyond their grasp is another matter. But because of the Ivory Coast leadership at that time, it seems that it was this leadership that infused a great amount of coherence, determination, and discipline in the majority producer camp (Kirschen, 1983, p. 44).

Since Ivory Coast is no longer paying levy, the members of the current agreement have to share an undue burden to finance the buffer fund. On the other hand, by supporting a rival Cocoa Producers' Alliance, but not ICCO, Ivory Coast is making it very difficult to reach a common strategy for producers.

Given the current lack of a unified producer strategy, the main issue facing the Ivory Coast cocoa industry is trade warfare with competing producing countries. For a while in the late 1970s, Ivory Coast and Brazil were engaged in a battle for leadership of the cocoa market. Huge and almost equal quantities of cocoa produced by both countries became the primary cause of the abundant world supply and consequent price decline during the years that followed. A market in which two major participants play that game of status is conducive to a special type of market outcome, Stackelberg disequilibrium, a scenario that makes everyone worse off than in competitive market conditions. In effect, the cocoa exporters' market options resembles the typical prisoners dilemma: the more one exporter puts on the market, the more revenue accrues to that exporter—provided that other exporters do not also flood the market. Yet it is rational for each single exporter acting independently to flood the market. When every exporter acts as stated, then no one gains, because of falling prices subsequent to the induced abundant supply.

The Costs of Going It Alone: the 1979–1980 Ivorian Cocoa Gamble

Frustrated with the inability to press its point of view in the ICCO, worried by the oversupply of cocoa in the world market in the late 1970s, and brushing aside complications arising from conditions in other producing countries and in the principal export markets, Ivory Coast decided to act unilaterally to support world prices. During the 1979–1980 harvest, it withdrew a huge 150,000 metric tons of cocoa from the market. This was equivalent to only 10,000 tons less than the entire crop of Nigeria, the world's fourth largest producer.

The gamble failed. Prices continued to slip downwards, due to the ability of Brazil and others, to quickly dispose of its crop and to the fact that manufacturers in the importing countries had built up record stocks in the previous two years. Thus the Ivory Coast was left with cocoa of declining quality and had no other alternative than to eventually sell it at a price far

below the market price prevailing when the stockpiling started. The storage facilities owned by the government and 33 licensed export companies were crammed as storage costs in the tropical climate rose. Eventually, 100,000 tons of the stockpile was disposed of in a single operation, the largest single cocoa transaction ever made (*African Business*, June 1980). It has been estimated that the gamble cost Ivory Coast \$95 million in storage costs, losses, and foregone opportunity costs of more timely sales, because of delaying from September 1979 to June 1980 (*African Business*, June 1980).

Changing Characteristics of Import Markets

A detailed simulation study of the world cocoa market by one of the present authors found that it was best characterized as oligopolists facing oligopsonists (Gbetibouo, 1982). The study showed that for the foreseeable future, Ivorian exports of 375,000 metric tons to its current trade partners would maximize Ivorian revenue. In the absence of domestic distortions, this would be consistent with an implicit 150 percent ad-valorem tax on Ivorian domestic producers (i.e., producers getting about two-thirds of the world prices). This implies that for growth to occur, either new markets must be found in other LDCs or in the Eastern Block, or else efforts must be made to differentiate the Ivorian product.

In the latter regard, some changing features of the traditional import market have to be reckoned with. Processing industries in major importing countries tend to require less cocoa beans, but more cocoa products such as cocoa butter and powder. In 1970, the United Kingdom imported 80,000 metric tons of cocoa beans and 21,000 metric tons of cocoa butter. In 1980 the same figures were, respectively, 69,000 and 30,000. The United States cocoa import structure follows the same pattern: bean import decreased from 277,000 metric tons in 1970 to 144,000 in 1980, while cocoa butter imports increased from 15,000 metric tons in 1970 to 35,000 metric tons in 1980. If this trend persists, exporters should increase their local processing capacity. Currently, Ivory Coast processes only less than one-tenth of its total crop, whereas Brazil processes more than half.

LESSONS AND CONSTRAINTS FOR FUTURE GROWTH IN THE IVORIAN COCOA SECTOR

Lessons and Constraints of Internal Cocoa Policies

The primary economic lesson from the Ivorian cocoa experience with respect to "getting agriculture moving" is how quickly the smallholder sector

can respond if agricultural production costs are kept low, relative to output prices. Although Ivorian cocoa planters are heavily taxed with respect to world prices, technological improvements, quality extension, good roads, skilled manpower decision-making at the technical and policy level, and cheap unskilled manpower all serve to keep cocoa production a growth industry. This is particularly noteworthy in the context of the current attention given to output price policies in many quarters, often with inadequate attention both to agricultural opportunity costs and to the length of time required for cost-cutting innovations to occur in the absence of specific policies to that effect.

The obvious political counterpart to the preceding point is that there is a congruence between the occurrence of policies favorable to low agricultural costs and the closeness of the power structure to agricultural interests. This is particularly noteworthy in regard to other countries in West Africa, where power structures are typically closely tied to urban interests. A question that arises for Ivory Coast in the future is what will happen to relative agricultural incentives as the Ivorian power structure becomes increasingly urban based. The latter phenomena can be expected to occur both with expansion of the urban sector and as university graduates with primarily urban allegiances begin to run the administration.

The most apparent internal constraint on the future of Ivorian cocoa production is the one plaguing agriculture in West Africa in general, namely the growing competition for resources of the nonagricultural sector. Possibly cocoa has held out for so long as a going venture by comparison with urban pursuits because of Ivory Coast's very great comparative advantage in this commodity. However, factor costs rising faster than productivity due to distortions in factor markets threaten to kill the goose that laid the golden egg.

Gbetibouo's work shows that in the presence of an undistorted internal factor market, Ivorian cocoa growth is maximized when producers pay no more than one-third of the world price of cocoa in implicit and explicit export taxes. Regional equity considerations and the slide in world prices threaten to produce suboptimal levels of taxation, as occurred around 1980. Furthermore, a new orientation towards import substitution in both manufacturing and food production will distort internal factor markets. In this case, the optimal export tax for cocoa will certainly be lower still.

Lessons and Constraints of External Cocoa Strategies

"Adam Smith" suggests that "when you are tempted to speculate in cocoa, lie down until the feeling goes away." However, this may not be easy advice to follow for a producer who is always in physical possession of the commodity. In view of the impact of the performance of the cocoa industry

on the Ivory Coast economy and the recent misfortune in managing current cocoa overproduction—misfortune attributable to local and external factors—it is necessary to seek new export strategies.

First, it may seem judicious to stem the current plunge of prices by signing the cocoa agreement. The failure of the gamble has shown that a single producer, even the largest one, cannot go it alone. Unilateral stockpiling cannot work against a trend of the market. Only cooperative measures can. However, these latter solutions are equally hard to agree upon. Many attempts by the Ivory Coast prior to and during the 1979–1980 cocoa gamble failed to elicit cooperation from the other main producers. Ghana was experiencing serious economic difficulties and could not afford the luxury of withholding cocoa, then the only reliable and substantial source of badly needed foreign exchange. There were also rumors that Ivory Coast made side payments to other leading African cocoa producers to make them momentarily less dependent on cocoa revenues and to persuade them to comply with collective stockpiling. But the side payments could not be made for long; Ivory Coast discontinued them and was soon left to face the down sliding market alone.

Unilateral storage is only successful if it is used as an offensive weapon to artificially accentuate a shortage that already exists. It cannot work as a defensive strategy to correct a structural trend of the market. Stock accumulation in a lasting state of supply glut is generally very costly for any single producer, and of little benefit for the country undertaking it, to say, however, be of some benefit to competitors who get a free ride. Of course, one way for the country to get something from unilateral stockpiling is to use the “mad man strategy”: build the reputation of irrationality and make a credible threat of flooding the market to extract concessions from competitors in international agreements. This is likely to be costly and difficult to repeat.

Local processing is another avenue to contemplate. Current processing capacity should be expanded and encouraged with adequate tax incentives, similar to those in Brazil and Ecuador, where exports of cocoa beans are taxed at a much higher rate than cocoa-derived products. This discriminatory taxation would help create more local value-added and help cope with changing import composition in major consuming countries.

Production capacity should be limited to a “reasonable” quantity. Given the supply response patterns that prevailed in the last two decades and the demand characteristics of the major importing countries, an optimum crop for Ivory Coast was estimated at 375,000 metric tons. This figure may be adjusted slightly upwards if the declining production trends in Ghana and Nigeria outweigh the production increases in new producing countries, such as Malaysia.

New marketing techniques should also be considered. Hedging is one way, but research should be done to find the optimal proportion of crop to hedge, since this technique may not be universally appropriate when there are both price and quantity variations (Rolfo, 1980; Gbetibouo, 1982), as in the case of cocoa.

New markets and expansion of old cocoa markets should be explored, especially in Africa and Asia. Promotion campaigns by the Ivorian Center for International Trade should be content with periodic exhibits, but be more aggressive and use the foreign media. Colombia, for example, advertizes mountain-grown coffee on U.S. television networks.

If an international agreement is reached, it should contain provisions for export quotas for force producing countries to limit supply. International buffer stocks in lieu of export quotas as the sole supply control mechanism in the agreement, as was the case in 1980, engenders managerial and financial problems. It may also lead to overproduction in the long run, with disastrous implications for the future of cocoa-based growth strategies.

NOTES

1. The views expressed in this paper are the sole responsibility of the authors, and should not be interpreted as reflecting the position of any organization with which they are affiliated. Gbetibouo took primary responsibility for the analysis of external issues while Delgado concentrated on internal factors. Senior authorship is not assigned.

2. The general reference for analysis and figures in this section is Gbetibouo (1982), unless otherwise indicated.

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