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Reforming the Cocoa Marketing and Pricing System in Côte d'Ivoire

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Abstract

During the past ten years, the government of Côte d'Ivoire has pursued various reforms to cut its role in domestic and export marketing of cocoa, to create a competitive environment for the private sector, and to raise producer prices. Despite some success, those reforms did not contributed much in raising producer prices. The maintenance of fixed producer prices and marketing costs and margins encouraged rent-seeking activities and led to efficiency losses.

In August 1999 the government liberalized the export marketing system by eliminating public management. The reform package included: the end to mandatory export authorization, the abolition of public forward sales, and the elimination of fixed minimum producer prices and marketing margins. The paper finds that the benefits from liberalizing the export marketing system, in terms of lower marketing costs/margins and higher producer prices, outweigh costs from eliminating the public forward sales program and fixed producer prices.

Additional results from a general equilibrium model indicate that reducing marketing costs would have had a small negative effect on aggregate welfare, but would have improved income distribution toward poorer rural areas. While Côte d'Ivoire has market power in the world cocoa market justifying a higher optimal export tax than the current one, raising export taxes may eventually reduce its market share and worsen income distribution particularly at the expense of the rural poor.

The views expressed in this paper do not necessarily reflect the views of the World Bank and should not be so attributed.

Introduction

Côte d'Ivoire is the largest cocoa producer with a share of world production that grew from 23 percent in 1980 to 40 percent by 1997 and 1998 and reached 45 percent in 1998/99. Since the record season of 1995/96, cocoa has usually contributed some 35 to 40 percent of exports, 15 percent of GDP, and more than 20 percent of government income[1]. Production increases during the 1990s were mainly due to high producer prices in the 1980s, new plantings in the west, elastic labor supply, and government incentives. The plantings that matured in the 1990s are projected to sustain production levels for the foreseeable future (ICCO 1998).

The Ivorian system had some flaws despite its successes in raising production and exports. An insistence on maintaining high producer prices against declining world prices in the late 1980s bankrupted the cocoa marketing system. In 1990, the government was forced to halve the producer price; in 1998 it was still repaying debts to the private sector incurred a decade before. Producer prices benefited little from the 100 percent devaluation of the CFA franc in 1994 so that the real dollar price of cocoa in 1997/98 crop season was less than the real dollar price of 1993/94, the last season before the devaluation. Government polices fixed marketing costs and restricted competition, increasing intermediation costs and leaving a low percentage of the FOB price to farmers. The government's stabilization fund accumulated large surpluses in years of relatively high world prices and these surpluses were not fully rebated to producers, thereby further reducing the producers' share of income from the crop.

The state tried several reforms in the 1990s. It sought to reduce its role in domestic and external marketing, to create a competitive environment for private agents, and to improve farmgate prices. Those reforms have failed to achieve a major objective however -- to increase producers' incomes in line with the FOB values of the crop.

This paper analyzes the key aspects of the Ivorian cocoa marketing and pricing system prior to the August 1999 reforms and evaluates reform proposals that led to the full liberalization of the sector in 1999. Section 1 analyzes the producer price policy focusing on the marketing cost structure and the level of producer prices. Section 2 examines the export sales focusing on the costs and benefits of publicly managed forward sales. Furthermore, this section analyzes the trade-off between fixed and variable producer prices. Section 3 evaluates the impact of lower export taxes and lower marketing costs

[1] In this paper we refer to "season" in the sense of the October through September marketing season; and to "year" as calendar year.

and margins using a general equilibrium model of the Ivorian economy. Finally section 4 summarizes and concludes.

In August 1999 the government fully liberalized external marketing. As of this writing it is too early to evaluate the results from liberalization. One key issue, however, has been the decline of producer prices that began in the third quarter of 1998. This decline is consistent with the reduction of the world cocoa prices during 1998/99. Prices during this period declined mainly due to weak market fundamentals and the existence of large stocks in consuming countries. Cocoa producer prices in Côte d'Ivoire were greatly influenced by these development. Furthermore, it is too early to discuss and demonstrate potential efficiency gains from the move to a liberalized marketing system.

I. Producer Price Policy

Prior to the 1999 reforms, private agents marketed and exported cocoa within an administered price and cost structure. A public company (the *Caisse de Stabilisation et de Soutien des Prix des Productions Agricoles*, known as CAISTAB), regulated the market with the goal of stabilizing prices so as to reduce income risks to market participants and to allow Côte d'Ivoire the benefits of forward sales[2]. CAISTAB controlled the marketing chain from the point of purchase from farmers through export, including that of processed products such as cocoa liquor, butter and cake. It exercised its authority through an official cost schedule (*barême*[3]), which set prices and margins for domestic marketing, and for export or sale to domestic processors. CAISTAB, in sum, determined profits and incomes in the Ivorian cocoa economy.

CAISTAB promulgated the *barême* at the beginning of each season. Table 1 shows the *barême* for 1997/98 and 1998/99. The *barême* started with CAISTAB's assessment of the reference CIF price for the coming season, and worked backward to the farm gate price. The reference CIF price was the weighted average of the price obtained in forward sales that covered 60-70 percent of exports and the projected spot price during the current season for the remaining 30-40 percent. The reference CIF price was calculated:

$$(1) P_{CIF} = a p_{t-1}^{f} + (a-1) p_t^{s}$$

[2] The direct predecessor of the current CAISTAB was created in 1962 when separate stabilization funds for coffee and cocoa, established in 1955, were merged. The current state company bearing the name *Caisse de Stabilisation et de Soutien des Prix des Productions Agricoles* was created in 1964 (Kouassi Atse, 1997).

3 We use the French words for this and other expressions used commonly in the local trade.

where P_{CIF} is the reference CIF price for season t, *a* is the share of forward sales, p^{f}_{t-1} is the forward price for the crop season t negotiated during the previous season t-1, and p^{s}_{t} is the projected price for remaining (*1 - a*) spot sales during season t.

Following the estimation of the reference CIF price, CAISTAB deducted estimated maritime freight and insurance costs to arrive at an FOB price, which was guaranteed to exporters. Costs in the domestic marketing chain were then deducted from the guaranteed FOB price, based on "reasonable" costs and returns for each agent involved in domestic production and marketing -- exporters, processors, traders, transporters, and farmers.

The *barême* then deducted the explicit specific export tax (known as the *droit unique de sortie, or DUS*) and CAISTAB's operating costs, including its substantial debt service, from the FOB price. The residual element in the calculation was then the producer price, which was set to satisfy the condition

(2) P_{CIF} - maritime transport - DUS - direct domestic marketing costs

- CAISTAB operations - P_p = S

where P_p is the producer price and *S* is the stabilization margin. In theory P_p was set so that *S* was zero.

Table 1

Official cocoa export prices, costs and margins (barême)

in 1997/98 and 1998/99

	1997/998 CFAF / kg	1997/98 Percent of FOB	1998/99 CFAF / kg	1998/99 Percent of FOB
CIF price (P_{CIF})	904	109	1040	108%
- maritime transport costs	75	9	79	8%
= FOB price	829	100	961	100%
- Export tax (*DUS*)	150	18	150	16%
- Direct domestic marketing costs	115	14	121	13%
- CAISTAB operations	49	6	40	4%
- Producer price (Pp)	455	55	575	60%
= Stabilization margin (*S*)	61	7	74	8%

Source: CAISTAB, *Tableaux des opérations de stabilisation*

The objectives of price policy were to keep producer prices stable and remunerative. Between 1980 and 1989, the stability objective was met in nominal terms by holding guaranteed nominal producer prices constant across seasons. The official producer price was 300 CFAF/kg from 1980 through 1983, rose to 350 in 1984, to 375 in 1985, and was held at 400 from 1986 through 1989[4].

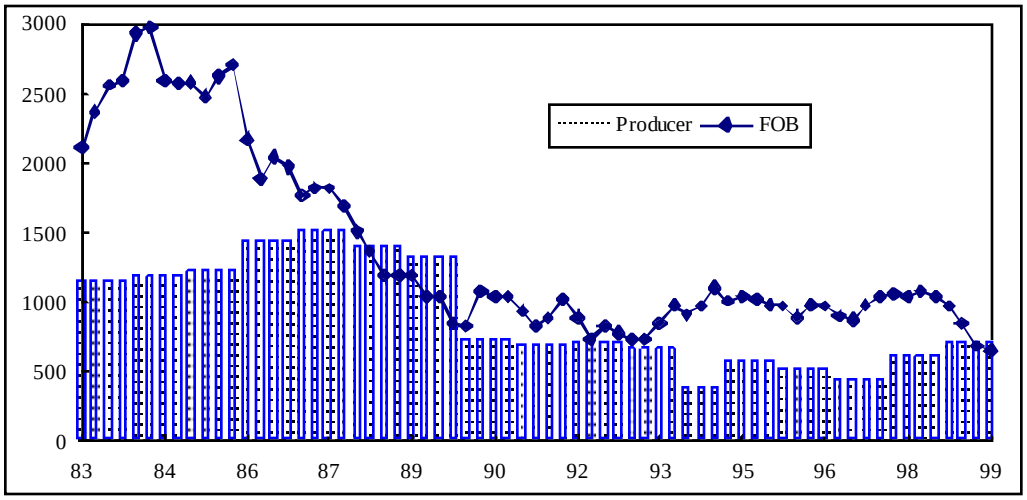
The goal of inter-annual price stabilization was abandoned in 1990 after an extended decline of world prices had made it impossible to maintain the producer price across seasons[5]. This is consistent with the argument of Deaton (1992) that inter-annual stabilization is difficult because slumps tend to last longer than booms; in such an asymmetrical market, even large stabilization funds go bust. The objective of producer price stabilization then changed from inter-annual stabilization to intra-annual stabilization (within seasons). Cote d'Ivoire did not attempt inter-annual price stabilization after 1990.

The objective of remunerative producer prices had not been well met, compared to other producing countries. Figure 1 compares Ivorian producer prices to world prices in real terms; the latter are represented by the International Cocoa Organization (ICCO) price converted to FOB Cote d'Ivoire. Following the collapse in 1990 from CFAF 400 to CFAF 200 per kg, producer prices remained low as a share of FOB. Though nominal prices rose after the 1994 devaluation and the (unrelated) recovery of world prices that began in 1993, nonetheless, real producer prices during the 1990s have been less than one-half of their 1980 levels. The difference between producer and FOB prices was enormous before 1987, became negative in 1988 and 1989, and has widened again since 1993 with the exception of 1998/99 crop season.

[4] Similar patterns were followed with coffee (Landell Mills 1996).
[5] Ruf (1996) discusses the cylical nature of the world cocoa market.

Figure 1

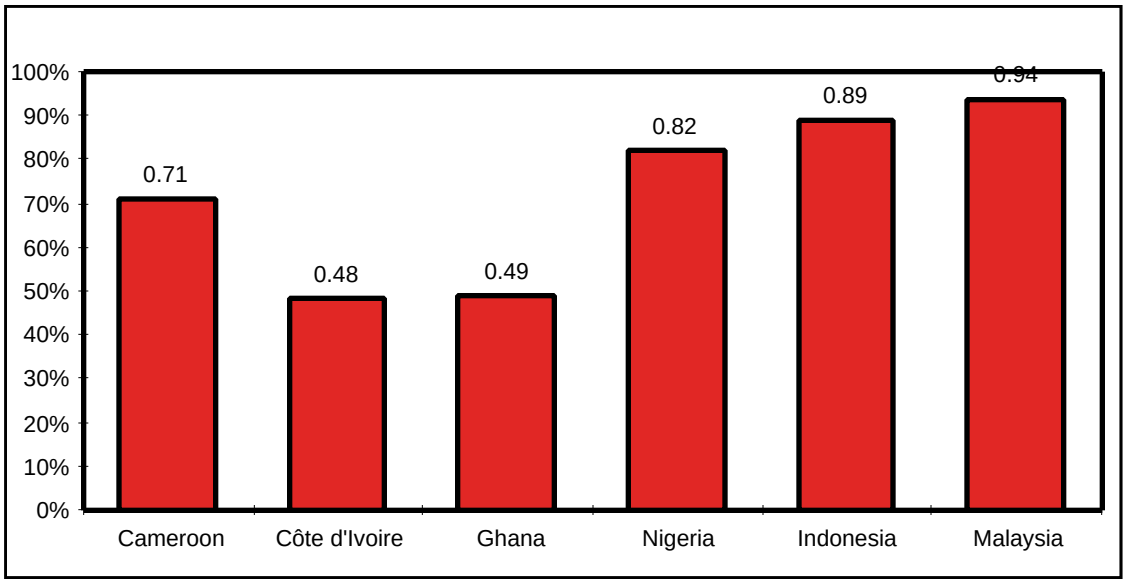
Cote d'Ivoire -- Quarterly Cocoa Prices (1990 US $/mt),1990-1999



Source*:* Author's calculations from World Bank (1998).

As a share of FOB, producer prices in Cote d'Ivoire were historically low compared to those in other major producing countries. Data from 1995 (Figure 2) show that the share of the producer price in Cote d'Ivoire was smaller than any other major grower, with the exception of Ghana. Similar comparisons for 1997 showed that the producer share of the FOB price in Cote d'Ivoire and Ghana remained between 48-50 percent, while producer shares of the FOB price in other major cocoa producing countries such as Brazil, Dominican Republic, Ecuador, Indonesia, Malaysia and Nigeria were between 82-92 percent.

Figure 2
Ratio of Cocoa Producer Price to FOB price
in Major Producing Countries (1995)



Source: Schreiber and Varangis (1995).

Hanak-Freud and Freud (1996) argue that producer prices are low in Cote d'Ivoire because of high export taxes. This is only partly true, however, as producer prices are still below those in other countries even when export taxes are considered. During the six seasons from 1993/94 through 1997/98, the explicit export tax (the *DUS*) in Cote d'Ivoire was approximately 22 percent of the FOB price and the average share of producer price to the FOB price was 49 percent, yielding a total of tax plus producer share to the FOB price of 71 percent. This is below producer price shares of the FOB price in other producing countries with the exception of Ghana.

Another feature of the *barême*, which we cannot quantify precisely, clearly discriminated against farmers. The *barême* paid exporters for shipping costs (insurance and freight; I&F) that exceeded market rates. Given that the CIF price was competitively determined, the higher I&F costs thus artificially lowered the FOB price used to determine producer prices. Based on discussions with shippers and on comparisons with market freight rates, CAISTAB's *barême* calculations of freight and handling costs were well above those actually paid by shippers.

II. Are Forward Sales Valuable?

Prior to the 1999 reforms, forward sales of cocoa had been a linchpin of the Ivorian system. They permitted CAISTAB to fix incomes of producers and other agents. There

were two key advantages claimed for forward sales: a) a risk benefit in that forward sales allowed the government to offer a fixed annual price to farmers and hence to reduce risks to the latter; and b) an income benefit in that they were said to improve total export revenues because forward prices for cocoa tended to be higher than spot prices[6].

The Ivorian Forward Sales Mechanism

Côte d'Ivoire used to sell much of its expected crop forward through a method known by the French acronym *PVAM* (*Programme de Ventes Anticipées à la Moyenne*). The *PVAM* was designed to spread forward sales evenly throughout the season in order to achieve an average CIF price; in theory it did not attempt to achieve a higher than average CIF price (i.e., to "beat the market"). CAISTAB managed the *PVAM* on behalf of the Ivorian government as follows:

CAISTAB decided the quantities of export rights (known as *déblocages*) to sell for a given contract execution date, for example, October-December;

CAISTAB auctioned the *déblocages* through an electronic trading system in Abidjan to firms holding valid export licenses[7];

The purchase of the *déblocage* constituted an FOB price guarantee to the exporter;

Once exporters bought *déblocages* in the auctions, it was assumed they either found a buyer abroad or sold a corresponding export (futures) contract in New York or London in order to hedge their sale price risk;

If the actual sale price at which the contract was executed exceeded the guaranteed FOB price, the exporter repaid the difference (called a *reversement*) to the CAISTAB; and

[6] Although some analysts claimed an additional benefit in that forward selling improved government budgeting because it allowed the government to hedge its income from cocoa, this did not apply in Cote d'Ivoire because the export tax was (and still is) specific, not ad valorem. In principal, however, even with ad valorem export taxes, the same benefit of forward sales is available to governments with liberalized agricultural sectors who have the option of choosing to hedge their tax revenues. They can do this by selling futures forward, to the value of the price exposure of their tax revenues, and then closing out the futures positions (buying back the futures contracts) as taxes become receivable. The extent to which they should hedge will depend on the tax take from the commodity export revenues, and the degree of progression in export tax rates. Thus, the use of futures markets provides similar benefits to forward sales for the government of Cote d'Ivoire to hedge its cocoa export tax revenues if taxes become ad-valorem.

[7] The electronic auction system was introduced in May 1996; before that date, *déblocage*s were allocated through private negotiations between CAISTAB officials and exporters.

If the actual sale price at which the contract was executed was less than the guaranteed FOB price, the exporter received the difference (called a *soutien*) from the CAISTAB.

A positive *reversement* implied that the stabilization margin (the variable *S* in equation {2}) was positive; a positive *soutien* implied that the stabilization margin was negative.

Forward sales through the *PVAM* were obligatory for private exporters because *déblocages* were mandatory for all exports. One argument for mandatory forward sales was that their benefits could not be gained by private agents because of market failure. The reasoning is as follows. Forward sellers usually must put up the crop, or some entitlement to the crop such as a warehouse receipt, as collateral. In the absence of a margin system, collateral was required because sellers have an incentive to renege on the forward contract if prices subsequently rose or if they could not obtain the quantity for delivery.

The existence of performance risk (i.e., the risk of non-delivery) would allow forward selling only if the seller had a good credit standing, if collateral was adequate, or if margins were high enough. In the absence of physical inventories, exporters would only be able to sell forward if they had a forward contract to buy from producers. However, domestic forward markets did not exist due to performance risk and poor contract enforcement. Performance risk was higher in Côte d'Ivoire because of many small growers, poorly functioning domestic financial institutions and weak legal contract enforcement, all of which were (and still are) characteristic of the Ivorian economy. Difficulties in reducing performance risk therefore made forward selling difficult by private agents and justified, in theory, public action to reduce such risk.

The performance risk in forward sales was indeed reduced by the intervention of CAISTAB. CAISTAB, by controlling exports through the sale of *déblocages*, was confident of the crop it would have had for sale, and hence of the aggregate performance risk, in the coming season. Because of CAISTAB's established reputation in the market as a reliable counterpart, it was able to sell forward well of harvest, sometimes as far as 18 months.

The Producer Risk Benefit of Forward Sales

Ivorian cocoa producer prices were fixed nominally within seasons and hence stabilization had been successful in that sense (Diop-Boare 1994). The question always remained: were the benefits from stable, but lower, prices greater than those from

variable, but higher, prices? One way to evaluate the risk-return trade-off to the producer is the Newbery and Stiglitz (1981) approach, which is to calculate the certainty equivalent (CE) producer price. The CE price is that guaranteed price (as was theoretically available for cocoa in Cote d'Ivoire) at which risk-averse farmers would be indifferent compared to a variable market price.

The CE price is calculated from:

$$(3) \qquad P_{ce} = \underline{P} \, (\exp [-\{\varepsilon + 0.5 \, R \, (\varepsilon-1)^2\}\sigma^2]),$$

where P_{ce} is the real quarterly CE cocoa price, $\underline{P}$ is the average observed real world price each quarter, ε is the iso-elastic short-run price elasticity of demand, σ is the coefficient of variation of real quarterly world prices, and R is the relative risk aversion coefficient. The variable $\underline{P}$ is first calculated on a CIF basis from world market data (World Bank 1998) and then converted to a farm gate basis by subtracting maritime transport and direct domestic marketing costs. In terms of Table 1, in 1997/98, $\underline{P}$ would have been 714 F/kg (i.e., the CIF price of 904 F/kg minus maritime transport of 75 F/kg minus direct domestic marketing costs of 115 F/kg). We define $\underline{P}$ as the "farm gate FOB price".

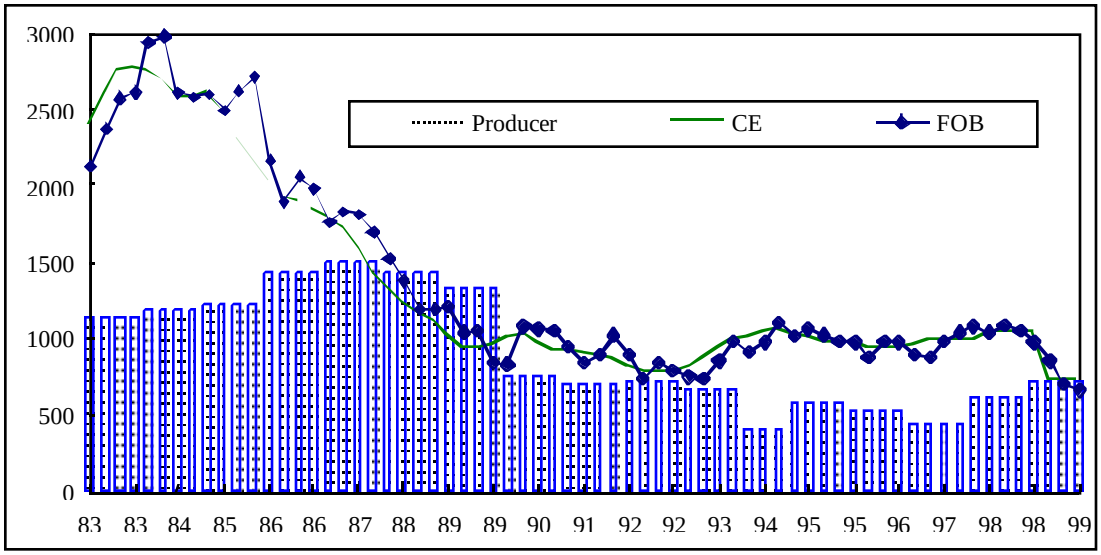
We note, first, that output is affected by stabilization, even though stabilization is within seasons, given that there is some weak short-term supply response for tree crops. Second, it is assumed that R is unity, indicating that farmers are moderately risk averse (based on extensive empirical evidence launched by Binswanger, 1978). Third, in the absence of price stabilization, the volatility of domestic producer prices would be that of international cocoa prices. With those assumptions, we construct counter-factuals in which intra-annual producer price variability increases from zero (perfect stabilization) to world levels (perfect transmission of international prices) for each season from 1993/94 through 1998/99.

The within season coefficient of variation of monthly world prices had a maximum of 18.0 percent in 1998/99 and a minimum of 2.6 percent in 1997/98. The absolute value of the short-run price elasticity of demand is assumed to be 0.6. Counter-factual stabilization benefits expressed relative to the $\underline{P}$ from equation (1) would therefore have ranged from a maximum of 2.6 percent of $\underline{P}$ in 1998/99 – by far the most variable season -- to a minimum of 0.1 percent in 1997/98. The average over the six seasons considered was 1.2 percent. This range of benefits can be compared to the structure of export pricing from 1993/94 through 1998/99 expressed as a share of FOB: producer price, 49 percent; explicit export taxation, 22 percent; direct domestic marketing costs, 14 percent;

CAISTAB's operating costs, 7 percent; and stabilization profits, 9 percent. Even taking the average 22 percent explicit export taxation, farmers were further taxed some 16 percent of the world price (7 for CAISTAB's costs and 9 for stabilization profits) and received stabilization benefits of about 1 percent of the world price. In the absence of stabilization, but with the same explicit export tax, farmers ought to have received a producer price at least 15 percent higher.

The same result can be visualized over a longer period in Figure 3, which portrays the observed real official producer price of cocoa, the farm gate FOB price ($\underline{P}$), and the certainty equivalent price (P_{ce}) by quarters from 1983 through 1997. The CE price is close to $\underline{P}$ given that quarterly prices vary little within crop seasons. The CE price is generally above the official minimum before 1989. A period of exceptionally low world prices occurred after 1989 and the CE price and the minimum were much closer then until 1993 or so when world prices rose again. In the 67 quarters observed from 1983 through September 1997, in only nine did the producer price exceed the CE price.

Figure 3
Real quarterly farm gate FOB, CE and
Producer Cocoa Prices (1990 US$/mt)



Source: Authors' calculations.

The Income Benefit of Forward Sales

A second benefit claimed for forward sales is that they allowed exporters a forward premium. From the mid 1980s through the mid 1990s, the world market was in relatively abundant supply. With stocks carried forward, forward prices were generally higher than

prices for nearby delivery [8]. This implies that producing countries could indeed have received higher prices by selling forward, i.e., the existence of a positive premium.

The forward premium is not necessarily positive, however. Futures prices may indeed be either upward (downward) biased, in that they might fall (rise) as maturity approaches. Gilbert (1997) argues that, if short hedging (selling futures to hedge) outweighs long hedging (buying futures to hedge), speculators will tend to be net long (bought futures), and the futures price of a given contract must rise over time as it approaches expiration to give a hedging profit. Where long hedging dominates, speculators will be net short and futures prices will fall towards maturity.

Gilbert (1997) analyzed London cocoa market data from 1989 through 1996. He found that the average November price of the December futures contract was 5.2 percent lower than its February average, 4.7 percent lower than its May average and 3.3 percent lower than its August average. This suggests an upward biased futures price consistent with long hedging. [9] The comparable figures for March were 4.4 percent higher in February, 3.3 percent higher in May and 2.3 percent higher in August. Because the mean differences between contract prices were not statistically significant, Gilbert (1997, p.46) concluded that the argument that producing countries gain in terms of higher export prices by selling forward should be judged as "not proven".

We further compared different futures positions to spot using the LIFFE data. Table 2 shows that only the averages of the two most remote positions were significantly different from spot. Figure 4 plots the difference of the third, fourth, and fifth positions against spot; if spot is December, then the third corresponds to the following March. The three series are obviously closely related and the difference between further and nearby positions can be either positive or negative. Based on this analysis and Gilbert's work, the evidence for a statistically significant forward premium is at best inconclusive.

[8] The forward price is based on the futures price for the relevant month plus or minus a quality premium. Nearby refers to the closest to delivery futures contract which may mean for immediate delivery or for delivery in a month or two. For practical purposes, a nearby contract is very close to being a spot contract.

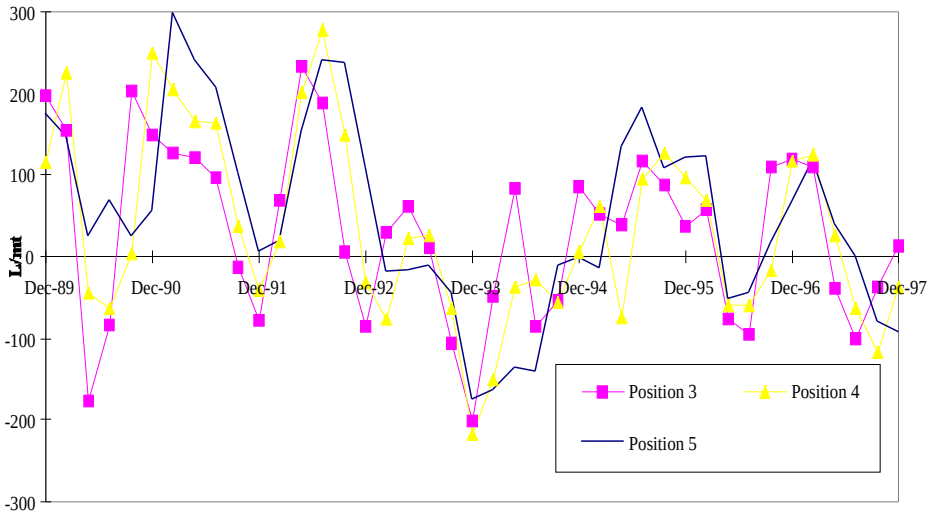
[9] However, Gilbert (1997) notes that hedgers have usually been net short, suggesting that speculators have consistently lost money in the cocoa market over this period.

Table 2
Cocoa Price Analysis of Variance

Position	Average price (£/mt)	Average difference from spot (percent)
Spot	834.2	0.0
Position 2	853.9	2.4
Position 3	858.1	2.9
Position 4	859.9	3.1
Position 5	877.5	5.2
Position 6	889.9*	6.7
Position 7	899.3**	7.8

Source: LIFFE monthly data from December 1990 through May 1997.
**F-statistic for n = 1,76 significant at 10 percent*
*** F-statistic for n= 1,76 significant at 5 percent*

Figure 4
Average Monthly Difference over Spot (£/mt)



Source: Authors' calculations from LIFFE monthly data from December 1990 through May 1997.

Even if the forward price exceeded spot, the net benefits of forward sales may be negative if public forward sales incur significant costs. The net benefits of forward sales are determined by the relation between the spot price and forward prices, by storage costs including financing, and by the availability of physical cocoa. We present two models of forward sales (denoted by M_1 and M_2). The gross benefits of the first model are only due to regular sales, that is selling forward evenly throughout the year, and not to the

existence of the forward premium. In the first model, CAISTAB sells forward through the *PVAM*. The net benefits of M_1 are the difference between the average price realized by selling forward regularly and the spot price, less the unit costs of operating the *PVAM*. In the model M_1, there is no forward premium because CAISTAB does not hold the physical cocoa and there are no physical storage costs.

The second model quantifies the income benefits (forward premium) that private exporters might obtain by selling forward. In the second model, private exporters buy physical cocoa and then choose between selling immediately at the spot price and selling forward at a price which differs from spot by the forward premium. Because most physical cocoa is available during the main harvest from mid-October through February, we limit our analysis of M_2 to an exporter who has cocoa in December or March and can sell spot at the December or March price or forward for future delivery. In model M_2 there is a forward premium and its sign -- positive, negative, or zero -- is an empirical question.

The net benefits of M_1 are

$$\Pi_1 = P_{f1} - P_1 - C_1$$ where:

P_{f1} is the average *PVAM* price, P_1 is the average spot price, and C_1 is the unit cost of the *PVAM*. The benefits of the *PVAM* over the average spot price derive from a disciplined strategy of forward sales and are unrelated to the forward premium. The net benefits are the gross benefits less the costs of operating the program and the additional maritime transport and direct domestic marketing costs incurred through the *barême*. In terms of Table 1, P_{f1} is the CIF price of 904 F/kg and C_1 corresponds to those of CAISTAB's operating costs that are directly related to the *PVAM*[10].

The price P_{f1} could not be directly observed[11] over many years but has been calculated from a simulation study of the *PVAM* (Marquet 1997) for 1979 through 1996. According to the study, the average simulated *PVAM* price would have been 1.9 percent higher than the average spot CIF price of equivalent quality cocoa. We use that figure to calculate the gross benefits of public forward sales in M_1 (Table 3).

[10]Some two-thirds of CAISTAB's average operating costs of 49 CFAF/kg in Table 1 are for subsidies to industrial processing of cocoa beans and to repayment of debt to exporters accumulated during the price slump of the 1980s.

[11] The price P_{f1} is the weighted average of contract prices, where the weights are quantities sold by CAISTAB at each position. It cannot be observed for previous seasons because CAISTAB has not always reported the quantities sold by position.

In estimating the net benefits of the *PVAM* we assume:

Cote d'Ivoire sells 1 million metric tons at an average CIF price of US$1507 per metric ton; the latter price is roughly the average *PVAM* price for 1997/98;

The average *PVAM* price is 1.9 percent higher than the spot CIF price (as calculated from Marquet 1997);

The operating expenses of CAISTAB related to the *PVAM* are some US$ 16.7 million (about 10 billion CFA francs at an average exchange rate of 600 CFAF/US$)[12];

The "excess marketing costs" are estimated at 5 percent of the FOB price, or some US$69 million; and

The producer price is the 1997/98 minimum indicative price of 455F/kg (US$758/mt).

Table 3
Net Benefits of Ivorian Public Forward sales
(Model 1)

Calculation of gross benefits	
Average price gain (*PVAM* - spot)	1.9%
Quantity exported (mmt)	1,000
Average CIF *PVAM* price ($/mt)	1,507
Average CIF spot price ($/mt)	1,479
Average FOB price ($/mt)	1,387
Total gross benefits (millions of $)	28.1
Costs of *PVAM* (millions of $)	
CAISTAB operating costs	16.7
Excess marketing costs (5% of FOB)	69.3
Net benefits (millions of $)	-57.9
Net benefits as % of producer income	-7.6%

Note: Table may contain rounding errors.
Source: Marquet (1997), CAISTAB (1998) and authors' calculations.

[12] Debt service is excluded. It could be argued that it should be included as the cost of past errors in judgment in managing the forward sales program.

The "excess marketing costs" are defined as the difference between the levels specified in the *barême* and the levels that would be observed in competitive markets. The excess arises out of the *barême* negotiations between CAISTAB and exporters[13]. The regulated costs within the *barême* are, as explained previously, a necessary feature of the *PVAM* because exporters cannot hedge their future domestic costs, including the price at which they buy from farmers, through market transactions; hence, they must fix those costs through an administered price structure, such as the *barême*. In theory marketing costs within the *barême* could have been determined competitively and the excess would have been zero; in practice, they were fixed during secret negotiations between CAISTAB officials and exporters. This price-fixing is insulated from competition so that exporters' declared costs, and the profit margins based on declared costs, are inflated. The inflated margins have two parts -- one is a pure transfer from producers to exporters, and is not a social cost; the other is a social cost that would be eliminated through competitive pricing. It is only the second part that we define as "excess marketing costs".

Excess marketing costs are in fact likely to exceed 5 percent of FOB. Ivorian marketing costs appear to be at least double those found in cocoa producing countries with liberalized marketing systems, where the sum of marketing costs is about 15 percent or less of the FOB price[14]. Many studies have observed high operating costs of marketing boards or public stabilization funds compared to competitive systems (e.g., Duncan and Jones (1993).

The relative net benefits of M_2 are:

$$\Pi_2 = \{P_{f2} /(1+ mC_2) - P_2 \}/ P_2$$

where P_{f2} is the forward price of M_2, m is the fraction of the year spent in storage, P_2 is the spot price for December/March sales, and C_2 is the cost of financing and physical storage over the storage period, relative to P_{f2}. The value of C_2 is taken as 0.13, including an annual domestic rate of interest of 10 percent and 3 percent annual physical storage

[13] Cameroon prior to the 1994 reforms had a cocoa marketing system very similar to Cote d'Ivoire's based on the concept of the *Caisse de Stabilization*. As in Cote d'Ivoire the system used the *barême* to determine the producer price by deducting marketing costs and margins. The system also used forward sales aiming at stabilizing producer prices. In Cameroon after market liberalization and the elimination of the marketing agency ONCPB, cocoa producer prices rose by 40-50 percent relatively to those in Cote d'Ivoire. According to Gilbert (1997), two thirds of this difference is due to reductions in Cameroonian marketing costs with the reminder being due to lower taxation.

[14] This was observed some time ago by Ruf and Milly (1990). Major cocoa producing that do not use marketing agencies are Brazil, Cameroon (after the 1994 reforms), the Dominican Republic, Ecuador, Indonesia, Malaysia, and Nigeria (after the 1986 reforms).

costs. We note that C_2 includes only private costs and does not include the costs incurred in operating the *PVAM*.

Table 4 reports returns to private forward sales. We can test the statistical hypothesis that Π_2 is equal to zero because the variables P_{f2} and P_2 are random. None of the mean net benefits is significantly different from zero at the 10 percent level. Hence, private agents would probably not have had an incentive to sell forward unless there are significant risk benefits (which we have not attempted to quantify), or unless they had access to cheaper external financing of their stocks.

Table 4

Relative Net Benefits of Private Forward Sales of Cocoa
(in percentage of December and March spot price),1989 - 1997

	Position		
	2	3	4
Gross benefit/spot price	4.6	6.5	6.5
Relative cost/spot price	3.3	5.4	7.6
Net benefit/spot price			
Mean	1.3	1.0	-1.0
T-statistic	0.693	0.330	-0.255

Source: Authors' calculations.

III. The Effects of Tax and Marketing Reforms

The government eliminated the official price and cost structure (the *barême*), public forward sales (the *PVAM*), and the stabilization margin in August 1999. It lowered the explicit export tax (*DUS*) from 150,000 CFAF/mt to 125,000 CFAF/mt in October 1999. As we have previously analyzed the PVAM, in this section, we discuss the likely effects of eliminating the *barême* and the stabilization margin at different levels of the *DUS*.

The importance of cocoa in the Ivorian economy means that a partial equilibrium analysis can be misleading however. In this section we investigate the economic effects of cocoa taxation and marketing policy with a computable general equilibrium (CGE) model[15].

[15] A similar model has been used by Chia et al (1992) to investigate poverty issues in Cote d'Ivoire.

The model begins with a modified social accounting matrix depicting the economy at the end of 1996 (summarized in Annex 1). In this model, an initial equilibrium exists where household income equals consumption plus savings plus net transfers; the value added from labor, land and capital in goods production is equal to the household endowments of those factors; exports equal imports plus net foreign savings (aid) minus debt service; and government revenue equals government consumption plus net foreign savings and net transfers to households minus debt service.

Goods production. There are 28 goods production sectors. Agricultural sectors are cocoa, coffee, forestry, food crops, other primary products (including livestock, fisheries, other perennial exports). Goods are produced by nested constant elasticity of substitution (CES) functions. Ignoring taxes for the moment, for any goods sector, Q_i, the production function is:

$$(4)\quad Q_i = [\{\delta_{ir} L_{ir}^{-\psi} + \delta_{iu} L_{iu}^{-\psi} + \delta_{ik} K_{ik}^{-\psi} + \delta_{in} N_i^{-\psi}\}^{-1/\psi}] + \sum_j G_{ij}^a$$

The term in square brackets is the nest for value added from primary factors; *L* indicates labor ('u' for urban, 'r' for rural), *K* capital, *N* land, and ψ is a parameter such that $\psi = 1/\_ - 1$ where σ is the elasticity of substitution among factors. The term G_{ij}^a is the aggregate of intermediate inputs into production and the elasticity of substitution between G and factors is zero[16].

Land is used only in rural goods. Both rural and urban labor produce rural goods because the value of agricultural output has two components. The first is on-farm output produced with land and rural labor. The second is the additional value of output between farm gate and FOB, which is produced by urban labor and capital.

The treatment of taxes varies by the type of tax (Rutherford 1994). Indirect taxes on intermediate goods are net (i.e., they raise producer cost), while trade taxes on outputs are gross (i.e., they lower producer price). Equation (4) is modified to account for taxes by

[16] There are some differences between the present model and that of Chia et al (1992). In our model labor is not differentiated by skill level; our model imposes a constant elasticity of substitution among factors equal to 0.5 in all rural goods (coffee, cocoa, cotton, forestry, fisheries, other agricultural exports, food crops) and to 0.8 in all urban goods (the 21 sectors of industry and services), while the corresponding elasticity varies between 0.4 and 0.9 across sectors in Chia et al; our model is based on the 1995 input-output matrix of Cote d'Ivoire and 1996 national accounts data, while that of Chia et al uses 1986 data. Both models assume zero substitution between primary factors and intermediate goods.

$$(4a)\quad Q_i(1-\tau_i^x) = \sum_f VA_f + \sum_j G_{ij}^a(1+\tau_{ij})$$

where VA is value added from primary factors, $\__{ij}$ is indirect taxes on inputs and τ_i^x is the rate of export tax. Export taxes are paid only on coffee and cocoa and there are no factor taxes.

Households. Five household classes supply primary factors, consume, save, invest, and receive government transfers. Classes are food crop producers (denoted as *FC*), export crop producers (*XC*), all other agricultural producers (*OA*), urban formal (*UF*), and urban informal (*UN*), defined by primary residence and source of income. For simplicity we have excluded cash crops from the income sources of *FC* households. This is admittedly unrealistic as all rural households have some cash crop income. But the classification is respected if one understands that the FC households produce little of the major export tree crops (cocoa, coffee, rubber, oil palm, and bananas). The *OA* households are a residual category of specialized livestock producers, fishermen, foresters, and rural artisans.

Households supply four factors: rural labor (*FC, XC,* and *OA*), urban labor (UF and *UN*), land, and capital. Food crop producers receive no income from export crops, but export crop producers do receive some income from food crops; for example, many farmers raise food crops on farms where the primary good is cocoa or coffee.

Rural households. Rural households are about 56 percent of the population (Annex 1 shows the distribution of households across classes). Smallholders -- defined as related individuals living and working on owned or rented land with mainly their own labor -- dominate the rural sector. The plantation sector is confined to the humid south, usually for production of oil palm and rubber. Those who are largely food crop producers (the FC households) are some 24 percent of the population. While they live throughout the country, they are most characteristic of the less humid north. The climate of the North is less productive, in the sense of giving lower yields of food crops and livestock and in forbidding production of the more lucrative tree crops. The FC households own 40 percent of value added (VA) from land and some 26 percent of VA from labor. Those who are mainly export producers are only 20 percent of the national population, but receive 45 percent of aggregate VA from land. The XC households have larger farm sizes (Benjamin and Deaton 1993: p. 302) and, by definition, grow the highest-valued crops. This class is a net importer of labor, mainly from the other two rural classes.

The urban households are 45 percent of the population, of which 10 percent is in the formal sector and 35 percent in the non-formal. Income is concentrated in the formal, which takes 25 percent of all labor income, 60 percent of capital income and about 36 percent of aggregate savings. Informal households hold some 24 percent of the capital stock, mainly in small-scale services and manufacturing, and take a little more than one-half of aggregate labor income.

Household income Y_h for class 'h' is defined as $\Sigma_f Z_{fh} + V_h$, where Z_{fh} is each household's factor endowment and V_h is its net transfer from the government, where the latter two are as shown in Annex 1. Households consume goods and services through a nested CES consumption function. In the lower nest, households consume a composite good, G^a_{ih}, of imports and domestic goods such that for any class of households

$$(5)\quad G^a_{ih} = [\beta^m_{ih}(Q^m_{ih})^{-\omega} + \beta^d_{ih}(Q^d_{ih})^{-\omega}]^{-1/\omega}$$

where β is the budget share, ω is the substitution parameter equal to 0.5, Q^d is a domestic good and Q^m is an imported good. The composite good produces utility for households from

$$(6)\quad U_h = \Sigma_i \varsigma_{hi} \log(G^a_{ih})$$

where ς_{hi} is the class share in the national consumption of a composite good. The household budget constraint is

$$(7)\quad \Sigma_i (P_i * G^a_{ih}) = Y_h - S_h - V_h$$

where P_i is the price of the composite good.

Savings and investment. Domestic savings are the total of savings by export crop producers and the urban classes. Food crop producers and other agricultural producers do not save. Domestic savings is equal to new fixed investment net of (constant) depreciation. The savings investment balance is then $\Sigma S_h = I$. Net foreign savings, *SF*,

is $X + A - M - D$, assuming that there are no net unrequited public or private transfers[17]. The variable A is gross aid flows and D is gross debt service (principal and interest). The government rebates net foreign savings to consumers through a lump sum transfer, shown in Annex 1 as "household transfers". The value of $I \equiv \nu\Sigma_i Q_{iu}$ where ν is the rate of new net investment. Investment is a fixed proportion of output in the industry, service, and mining/petroleum sectors and is zero in rural goods.

Foreign trade. Imports are produced with foreign exchange. Imports and domestic goods are transformed into domestic supply with CES functions. Exports are produced with value added and intermediate goods, as in equation (4). The allocation of exportables among exports, domestic consumption and government revenue through export taxes is:

$$(8) \qquad Q_i^x(1-\tau_i^x) = X_i + \sum_h G_{ih}^x + \sum_j G_{ij}^x$$

where Q_i^x is output of exportables gross of export taxes, X_i is net exports, G_{ih}^x is domestic consumption of exportables, G_{ij}^x is the use of exportables as intermediate inputs, and τ_i^x is the export tax rate.

Government. The government's income is indirect taxes and foreign savings (the trade surplus and aid). Its expenditure is consumption of goods and services and foreign debt service. Any excess of income over expenditure is rebated to households so that the government's budget constraint is

$$(9) \quad R + (A - D) - C_g = \sum_h V_h$$

where R indicates revenue, A is aid, D is foreign debt service (principal and interest), C_g is government consumption, and $\sum_h V_h$ is the sum of government transfers to households. The variables R and C_g must be ≥ 0, while A, D, and $\sum_h V_h \gtreqless 0$; in the base data set, $A > 0$, $D > 0$ and $\sum_h V_h > 0$ (Annex 1). Revenue is

$$(10) \quad R = \sum_i (X_i\tau_i^x + G_i^m\tau_i^m + \sum_j G_{ij}^a\tau_{ij}^a)$$

[17] The volume of net public transfers is in fact small. That of net private transfers is large, but because private transfers consist largely of unrecorded labor remittances, its volume cannot be reliably included in the model.

The tax rate on cocoa in equation (10) has two parts. The first is the explicit export tax (the *DUS*). The second is the sum of the stabilization margin and allocations to CAISTAB reserves. This second part has two putative uses: ex-post producer price stabilization, and for marketing and other service costs. Because ex-post price stabilization is not paid and because CAISTAB's costs are neither competitively determined nor directly related to real services, the stabilization margin amounts to a second export tax[18]. The 1997/98 *DUS* was 18.1 percent of FOB and the implicit export tax rate was 8.6 percent, giving a total taxation of 26.7 percent with respect to FOB[19].

The Optimal Partial Equilibrium Export Tax

Projected long-term Ivoirian exports of 1.0 mmt would give the country a share of 0.37 at projected world exports of 2.7 mmt. Given that market share, Cote d'Ivoire can improve national income from cocoa by setting an export tax so that the domestic producer price is the world price minus the export tax. With long-term values for the rest of the world (ROW) supply elasticity of 1.0, ROW demand elasticity of -0.6, and a projected Ivorien world market share of 0.37, the absolute value of the elasticity of demand facing Cote d'Ivoire (Trivedi and Akiyama, 1992) is

$$\varepsilon_{dci} = (\varepsilon_{drow} - (1-0.37)*\varepsilon_{srow})/(0.37) = 3.32.$$

implying an long-term export tax of 30.1 percent, which is close to the current total of 26.7 percent.

General Equilibrium Effects

Now we consider the general equilibrium effects. Given that the current total export tax from Côte d'Ivoire is reasonably close to the long-term optimum, one expects national income to decline with large changes in the current export tax. Hence, adjustments in the export tax around the optimum would chiefly be redistributive unless there are real cost reductions associated with other policy changes.

Table 5 summarizes five experiments involving the export tax and marketing costs. In the first three experiments, the total cocoa export tax (including the explicit export tax and the stabilization margin) varies from 10 to 15 to 20 percent of FOB. A fourth experiment holds the explicit cocoa tax at 17.5 percent (about two-thirds of the current

[18] It may be objected that this revenue is in fact used to fund other government services, but this does not change the incidence of the cost with respect to coffee and cocoa producers; they are still taxed.

[19] The 18.1 percent is that shown in Table 1; the 8.6 percent includes the 7 percent for the stabilization margin shown in Table 1 and a part of the 6 percent of CAISTAB's operating costs.

total rate) and lowers direct domestic marketing costs by 5 percent. A fifth experiment lowers marketing costs by 10 percent, with the explicit export tax held at 17.5 percent, which is the ad-valorem equivalent of the *DUS* with respect to projected average world prices. The fifth experiment puts Ivorian marketing costs at a level similar to those of competitive systems.

With unchanged marketing costs, the lower export taxes basically redistribute income from urban to rural producers, as shown in experiments (1), (2), and (3) in Table 5. The redistributive effects work through the rise in rural wages induced by the higher cocoa profitability associated with lower export taxation. At a cocoa export tax of 10 percent (experiment 1), rural wages and land rents rise by between 18 and 20 percent. Those factor price shifts produce greater welfare changes among food crop producers and other agricultural producers than among export crop producers; this relative change is related to the sharp decline in coffee output associated with the rise in cocoa production, since cocoa and coffee are to some extent competitors in production.

We calculated an aggregate welfare index for each experiment in which the weights are the shares of each class in initial consumption. The shares (from Annex 1) are FC, .116; XC, .233; OA, 0.048; UF, 0.296; and UN, 0.307. Cutting the total export tax from the current total of 26.7 percent of FOB reduces the aggregate welfare index by 1.9 percent. Eliminating the implicit part of the export tax now levied through the stabilization fund and eliminating the *barême* so as to lower domestic marketing costs makes the aggregate welfare effect negligible and has a noticeable redistributive effect in favor of the poorer rural groups.

The government of Cöte d'Ivoire receives about 13 percent of its annual revenue from the cocoa *DUS*, so it is unlikely that it would drop that levy completely. A more probable scenario is one in which it liberalizes export marketing and privatizes CAISTAB, thereby cutting internal and external marketing costs [20] and eliminating the stabilization margin. This scenario is depicted in experiments (4) and (5) in Table 4, which show lower marketing costs by 5 and 10 percent respectively at an export tax of 17.5 percent. The lower marketing costs -- which consist partly of a transfer of rents from export license holders and marketing intermediaries to land owners and laborers who produce cocoa and partly of a real reduction in production costs -- allow producers a higher share of FOB. At

[20] The CAISTAB system is associated with a fixed rate for maritime transport, which makes most of the difference between the FOB and CIF prices. Hence, elimination of the fixed maritime transport rates in the *barême* ought to raise the Ivorian FOB price even if the world CIF price does not change at all. Changes in marketing costs would benefit coffee as well.

the same *DUS* rate of 17.5 percent, lower marketing costs also have a lower opportunity cost in foregone coffee production, and produce very little change in aggregate welfare.

Table 5
Economic Effects of Changes in Export Tax
and Marketing Costs of Cocoa

Experiment number	(1)	(2)	(3)	(4)	(5)
Total export tax (percent)	10	15	20	17.5	17.5
	(percentage changes from base)				
Marketing costs	0	0	0	-5	-10
Value of output					
Cocoa	27.8	19.8	11.5	17.1	18.5
Coffee	-28.6	-21.3	-12.9	-16.5	-15.8
Other agriculture	-5.1	-3.6	-2.1	-3.2	-3.5
Industrial goods	-9.7	-7.1	-4.1	-5.8	-6.1
Welfare index					
Food producers	12.8	8.5	4.9	8.5	10.4
Export producers	5.7	4.1	2.4	4.4	5.6
Other rural producers	14.2	9.2	5.3	9.3	11.3
Urban formal	-8.0	-5.5	-3.0	-4.5	-4.8
Urban informal	-9.7	-6.5	-3.6	-5.4	-5.9
Weighted index	-1.9	-1.2	-0.6	-0.5	-0.2
Factor returns					
Land rental	21.4	14.6	8.2	14.1	16.9
Rural wages	22.8	15.6	8.7	14.8	17.6
Urban wages	-2.8	-1.9	-1.0	-1.4	-1.4
Producer share of FOB	0.77	0.73	0.69	0.72	0.74

Source*:* Authors' calculations.

IV. Conclusions

This paper has analyzed the cocoa marketing and pricing policies in Côte d'Ivoire before the completion of liberalization in August 1999. The main conclusions follow.

First, cocoa price and marketing policy reduced farmers' mean income for many years. Prior to the August 1999 reforms, the share of the Ivorien producer price to the

FOB price and the absolute level of producer prices were the lowest among the major cocoa producers. The adjustment of producer prices with respect to the world price did not compensate growers in bad years for what they had lost in good years.

Much of the debate about stabilization hinges on whether farmers make the right choices about income fluctuations caused by exogenous price movements. The evidence, while far from complete, indicates that farmers use windfall gains rationally[21]. It is not necessarily true, therefore, that in the absence of government stabilization programs farmers will overspend, either on current consumption or on overinvestment in new plantings in response to temporarily high prices, as long as there are alternative economic activities.

The fixed intra-annual price provided comparatively little benefit to producers because it dealt with the wrong source of variation. Most of the price variance had been between years, not within years. Therefore, the main function of the annual minimum price was to create opportunities for corruption through harassment of traders and farmers during official attempts to enforce the minimum price.

Second, price and marketing policies reduced farmers' mean incomes without compensating them adequately in terms of lower price risk. The government stabilized growers' revenues from cocoa only at a high cost in mean income.

Third, the costs of the public forward sales system (*PVAM*) outweighed its benefits. Proponents of the forward sales claimed that it benefited producers because it allowed a stable producer price and because forward prices are higher than spot. We find that mean producer prices under the *PVAM* did not compensate for the lower price risk. The argument that Cote d'Ivoire gained higher prices by selling forward is found inconclusive, but the net benefits are conclusively negative.

Fourth, the farm price could have been higher in the past. There would have been two ways to do so: by lowering the export tax or by allowing competition to impose greater efficiency in marketing. Lowering the cocoa export tax would have reduced national income slightly, however. Côte d'Ivoire has enough monopoly power in the world market

[21] Hill (1963) argues that Ghanaian cocoa farmers are quite careful regarding wasteful consumption expenditures. Bevan, Collier and Gunning (1992), suggest that Kenyan coffee farmers understood the temporary nature of the coffee price boom in the late 1970s and saved about 60 percent of their extra income. Bauer (1984) finds that farmers in periods of booms diversify into other activities.

that the income maximizing export tax is at least 30 percent even taking into account general equilibrium effects.

Fifth, lowering the explicit export tax (the *DUS*) from its 1997/98 level would have had a small negative effect on national income. While the 1997/98 explicit export tax of 17-18 percent was well below the short-term optimal rate, raising the explicit export tax closer to the optimal rate would have provoked a supply response from the other producers and eventually reduce Ivorian market share.

Sixth, lowering the cocoa export tax would have improved the national income distribution. The improvement depends on the weights assigned to different household incomes. Because rural poverty is more severe than urban, weighted incomes at lower export tax rates would probably have been welfare improving.

Seventh, raising the minimum producer price by making domestic marketing cheaper through more aggressive reforms would have raised national income at a given export tax. Total Ivorian marketing costs -- including the indirect costs incurred by the operations of CAISTAB -- were high compared to other cocoa producing countries. Greater marketing efficiency should have been achieved by the elimination of the *barême* in August 1999 and would not have had the indirect fiscal effect of raising taxes in other sectors.

We note an important indirect effect of a lower implicit export tax. This would have been benefited rural groups that do not produce cocoa. A cut in the export taxation of cocoa would have improved rural wages and hence benefited rural producers of food crops and other exports. Given the difficulties in achieving this desirable result by other means, this would not have been a trivial benefit.

Annex 1
Supply and Demand Matrix for Côte d'Ivoire in 1996
(billions of CFA francs)

	Goods Sectors (Q)								Factor Endowments [Zfh]						
	Coffee	Cocoa	Forest	Other Agric	Other Exports	Industry	Services	Minerals	Land	R. Labor	U. Labor	Capital	Savings [Sh]	Transfers received(Vh)	Total
Output (Q)	19.4	53.5	100.7	985.5	280.8	1795	2865.5	107.1							6207.5
Value added from primary factors [VAf]															
Land [N]	67.2	266.4	19.3	594.3	112.2										1059.3
Rural labor [Lr]	22.4	132.2	16.4	231.1	84.3										972.7
Urban labor [Lr]	5.8	28.6	0.1	6.3	3.9	204.6	870.6	30.4							1150.3
Capital [K]	20.6	101.4	0.5	22.2	13.7	547.3	1018.2	56.6							1780.4
Intermediate goods use [G]	89.2	309.9	82.1	147.1	136.2	1854.3	751	26							3395.7
Taxes on intermediate goods [tg]	0	0	8.3	-12.9	2	237.7	381.8	0.6							617.6
HOUSEHOLDS (pop. 14.23 million)															
Consumption [C]															
Food crop (3.4 million) [FC]				197.2	13.9	178.8	101		423.7	126.5			0	-58	984.4
Export crop (2.9 million) [XC]				379.5	21.9	388.4	197.6		476.7	277.2		284.9	124.7	75	2227.5
Other agricultural (1.6 million) [OA]				79.5	5.6	77.2	40.8		158.9	82.7			0	-38	407.2
Urban formal (1.4 million) [UF]				126.1	8.5	568	547.2				287.6	1068.2	159.3	59.4	2830.4
Urban informal (5.0 million) [UN]				243.3	21.2	662.2	364.8				862.7	427.3	154.8	165.3	2910.7
Investment [Ih]			10.1			120.5	308.1								438.7
GOVERNMENT															
Tax revenue [R]															
Export taxes (tx)	2.6	285.9													288.5
Import taxes (tm)			0.1	18.7	0.3	382.93									402.9
Consumption [Cg]						70.2	517.5								587.7
Transfers to households [V]														203.7	
Gross external debt service [D]															600
Aid [A]															371
FOREIGN TRADE															
Exports [X]	185.9	784.9	26	2.4	71.5	1048.9	156	6.5							2282.1
Imports [M]			0.4	187.2	0	1260.9	600	4.4							2053

Source: République de la Côte d'Ivoire (1997).

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