

# Reforming the Cotton Sector in Sub-Saharan Africa (SSA)

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## Abstract

Many countries of Sub-Saharan-Africa (SSA) have a strong comparative advantage in cotton production. The share of SSA in world cotton production increased from 3% to 5% during the last decade. During the same period, its share in world exports of cotton lint rose to 15% in 2001/02 and the potential for further growth is substantial, particularly in West and Central Africa. Reforms have been undertaken in several SSA countries to improve the competitive position of the cotton sectors and strengthen private sector involvement. Some of the reforms programs have been successful while some other have encountered difficulties. This study was undertaken to review the progress achieved in six SSA countries at different stages of their reform agenda. The objective was to assess the status and outcome of the reforms in the selected countries and draw lessons that could be used by other countries where cotton sector reforms are being planned, as well as by countries that are engaged in the process of liberalization of their cotton industry and are reflecting on the way forward.

Measuring the impact of the cotton sector reforms on poverty is not easy for three reasons. First, reforms in the three Francophone countries under review are still in progress or at an early stage and the process followed by the three Anglophone countries in liberalizing their cotton sector does not provide a model that the former could readily copy. Second, institutional reforms need to be adapted to the socio-political context of the country concerned. Third, the nature of the reforms and their sequencing have to be designed taking into account the initial conditions of

the sector and the outcome may be affected by the quality of management, as much as by the merits of the theoretical models. For these reasons, the study does conclude with the choice of a model. Four other main conclusions emerge from the review. (i) An efficient credit system allowing small farmers to acquire quality inputs in a timely manner is a prerequisite for developing the cotton sector and reducing poverty; for this purpose, a direct link between the payment of seed cotton and the recovery of input credits has to be guaranteed. (ii) Performances can be improved by giving more power to cotton growers in the management of the sector and encouraging a greater participation of the private sector. (iii) Research and extension services cannot be left under the sole responsibility of the public sector. (iv) Seed cotton marketing activities are best performed in a regulated framework agreed upon by the inter-profession.

The economics of world cotton production and trade have been in recent years strongly distorted by the heavy subsidies paid by OECD countries (USA and EU) to their cotton farmers. These subsidies have pernicious economic effects, since they promote production in countries with high production costs at the expense of countries with lower production costs and, in particular, at the expense of African countries. The negative impact of these subsidies in the fight against poverty is quite dramatic. By increasing artificially production and exports and depressing world prices, the subsidies reduce the export earnings of African countries, thus curtailing the revenues of several millions of Africans living under one dollar a day.

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# **Reforming the Cotton Sector in Sub-Saharan Africa (SSA)**

**Louis Goreux**

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**March 2003**

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\* **This draft represents only the views of the consultant which may differ from those of the World Bank or those of the MAE and AFD which financed the study.**

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## ACRONYMS

ADB	African Development Bank
AFD	Agence Française de Développement
AIC	Association Interprofessionnelle du Coton
AP	Association de Producteurs, Producers association
BCI	Tax on profits from commercial and industrial activities
CAGIA	Coopérative d'Approvisionnement et de Gestion des Intrants Agricoles
CFA	Communauté Financière Africaine
CFAF	Franc CFA
CFDT	Compagnie Française pour le Développement des Fibres Textiles
CIDT	Compagnie Ivoirienne pour le Développement des Textiles
CIRAD	Centre Internationale de Recherche Agronomique pour le Développement
CMDT	Compagnie Malienne pour le Développement des Textiles
COTTCO	Cotton Company of Zimbabwe
CPI	Consumer Price Index
CRI	Cotton Research Institute (Zimbabwe)
CSPR	Centrale de Sécurisation des Paiements et des Recouvrements
CTC	Cotton Training Center (Zimbabwe)
EURONEXT	Established on 09/22/00 as a merger of the Amsterdam Stock Exchange, the Brussels Exchange and the Paris Bourse
GCCL	Ghana Cotton Company, Ltd.
GDP	Gross Domestic Product
Ha	Hectare
ICAC	International Cotton Advisory Committee
IFS	International Finance Statistics (IMF)
Kg	Kilogramme
LCCI	La Compagnie Cotonnière Ivoirienne
MAE	Ministère des Affaires Etrangères
SOFICOCI	Société de Financement des Intrants Coton en Côte d'Ivoire
SOFITEX	Société Burkinabé des Fibres Textiles
SONAPRA	Société Nationale pour la Promotion Agricole
SSA	Sub Saharan Africa
STABEX	Stabilisation des Recettes d'Exportation (EU facility)
URECOS-CI	Union Régionale des Coopératives de la Zone de Savane
WTO	World Trade Organization

## FOREWORD

Cotton production was initially promoted in Sub-Saharan Africa (SSA) through public monopolies, which were inspired by the Compagnie Française pour le Développement des Fibres Textiles (CFDT) (a French public enterprise) in francophone countries and public marketing boards in Anglophone countries. It is now broadly agreed that the state should withdraw from productive activities which can be performed more efficiently by the private sector and that public monopolies may lead to rent seeking activities. As a result, public monopolies have been progressively abolished through privatization and liberalization.

The cotton sector has been liberalized over the last fifteen years in a number of Anglophone countries and privatized over the last seven years in several Francophone countries. Some of the reforms have been successful while some other have not. It was therefore decided to review the progresses achieved in six SSA countries at different stages of their reform agenda. The objective was to assess what worked and did not work in an attempt to draw lessons which could be used by countries such as Mali which has not yet liberalized its cotton sector but intends to do so as well as countries which are in the process of liberalizing.

Three sample countries (Benin, Burkina Faso and Côte d'Ivoire) belong to the CFA zone; they are the three largest cotton producers in SSA after Mali. The three other countries (Ghana, Tanzania and Zimbabwe) are Anglophone. Zimbabwe was selected because it is the largest cotton SSA producer outside of the CFA zone, it liberalized its cotton sector seven years ago and the operation was considered as one of the most successful. Ghana was selected because it liberalized its cotton sector fifteen years ago and cultivation is located in a cotton belt shared with Burkina and Côte d'Ivoire; but Ghana is a small producer and its experience with liberalization was not considered as successful. Due to time shortage, the consultants did not visit Tanzania, which liberalized its cotton sector in 1993; however, reference is made to that country's experience because it was considered relevant to the present study.

The study was jointly financed and monitored by the World Bank and French institutions. The visit took place in a six-week period starting mid-February 2002; it was conducted by two international consultants (Louis Goreux and John Macrae) assisted by a local consultant in each of the country visited. The present report prepared by Louis Goreux is a revised version of the draft circulated at the cotton meeting held in Abidjan on June 25-26, 2002. It takes into account the comments made, but is submitted under the sole responsibility of the consultant. The review by countries was prepared by John Macrae and can be obtained by email from the author [jmconsultants@club-internet.fr](mailto:jmconsultants@club-internet.fr).

The authors wish to express their gratitude for the assistance they received during the course of the study in Washington, D.C., Paris, and the five African countries visited. They wish, in particular, to thank the five local consultants: Massita Coulibaly, Henri Some, Saa Dittho, Borgu and Daniel Ndlela.

## EXECUTIVE SUMMARY

A number of countries in SSA have a comparative advantage in cotton production. The share of SSA in world cotton production increased from three percent to five percent during the last decade, which may appear modest. However, its share in world exports rose to 15 percent in 2001/02 and this share (West and Central Africa, in particular) could rise further.

Following the crises encountered by several public monopolies, reforms were undertaken to improve the competitive position of the cotton sectors. However, as shown in this report, not all reforms were successful. Although reforms are more advanced in Benin than in Burkina Faso, results were not necessarily better. In the three Anglophone countries, liberalization was initially a success, but the outcome does not look as promising today as it did a few years ago.

In Burkina, SOFITEX still has a monopoly for the purchase of seed cotton, but producers acquired 30 percent of the company's shares in 1999 and obtained a majority in the committee responsible for the selection of input bids. Producers participate in the management of the sector and although relations between various stakeholders are good, producers' associations remain fragile.

In 1998, CIDT was broken down into three units of comparable size and, after a two-year transition period, the two new private companies and the remaining part of the CIDT have been operating independently. One of the two new companies was managed better than the old CIDT, but the other was not. Conflicts among stakeholders were fuelled by the north-south political conflict and important changes could occur in 2002/03.

In Benin, privatization started with the provision of inputs in 1992 and later included ginning in 1995. The sequence of measures was not always well designed and a number of problems soon emerged. Most of those have now been solved, notably by establishing a clearing house for all financial transactions of the sector (CSPR); but the sector remains heavily regulated. Producer prices are fixed for the entire country and announced at the beginning of the marketing season, as in the past. With eight cotton companies, surplus ginning capacities, and no competition to clear the market, a new distribution system had to be designed. As a result, the industry stakeholder organizations<sup>1</sup> in the industry allocates a quota to each company on the basis of its installed capacity and each ginner is informed of where to buy his cotton and how much.

In Ghana, the cotton sector was liberalized in 1985 and this had a stimulating effect on the economy; however, production reached a peak in 1998/99 and declined steadily afterward. Free entry led to widespread poaching and the virtual collapse of input credits. In March 2002, Ghana had 12 cotton companies with three more applying for registration while the production of seed cotton had fallen to 15 thousand tons and the debt of cotton companies exceeded five times the value of yearly output. The government attempted to intervene recently without success.

In Zimbabwe, the 1995 liberalization gave a boost to the cotton sector and the arrival of newcomers led to market improvements. When Cargill started paying producers on delivery day, other ginners followed suit. But after Cottco absorbed one of its two rivals in 1999 and captured 75 percent of the market, Cargill did not try to compete on the price front with the dominant player. Producers now

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<sup>1</sup> Includes input suppliers, producers' associations, ginners, manufacturers, transporters.

receive a small part of the benefits accruing from the *de facto* dual exchange rate. At the blend exchange rate available to ginners, the share of export prices received by producers fell from 51 percent in 1996/97-1999/00 to 31 percent in 2000/01-2001/02 when the macroeconomic situation progressively deteriorated. By contrast, in the same two years with falling world prices, producers received 55 percent of the export price in the three CFA countries. A number of small traders attracted by the profitable parallel exchange rate became more aggressive and poaching could become a problem. To limit poaching Cottco became more discriminating in allocating credit. As a result, it is more difficult for poor farmers to obtain input credits in Zimbabwe than in Burkina.

In Tanzania, the 1994 liberalization of the cotton sector was initially successful. But it soon led to massive surplus ginning capacities which stimulated poaching. When the reform was launched, it had been expected that the private sector would jump in to replace the input credit and distribution system previously managed by the Board. This did not occur and the use of purchased inputs dropped sharply, yields fell, and quality suffered. By 1998/99, production had fallen to a 20-year low and government stepped in with mixed success, notably by creating the Cotton Development Fund in 1999 to improve the quality of seeds and promote the use of chemicals inputs, but their use remained below needs.

Liberalizing the cotton sector is a difficult undertaking which is not without risks, since cotton is an annual crop needing large investments which have to be amortized over many years. Cotton cultivation requires large applications of fertilizers and pesticides which most poor farmers cannot acquire without an appropriate credit system, and the most efficient way to recover input credits is to deduct the cost of inputs from the value of seed cotton at delivery to the ginnery. Maintaining soil fertility and raising yields requires animal traction for which medium-term credits are needed. Moreover, improving cultivating practices and empowering growers require a steady and lengthy institutional build-up. For all these reasons, marketing of seed cotton has to be regulated. Experience shows that it is important to prevent entry to traders only aiming at making a quick profit. Such traders were often those who introduced the practice of poaching in Anglophone countries.

CFA countries can draw three lessons from Zimbabwe. First, with an efficient computer-based system of payments, producers can be paid on delivery to the ginnery. Cotton Ivoire, one of the best performing companies in the CFA zone, has reduced payment delays from 33 to 23 days, which is commendable, but there is still room for improvement. Second, although Cargill does not provide input credit, it introduced a successful "Farmer Input Voucher" system allowing producers bringing seed cotton to return with inputs for their next crop by automatically deducting the cost of inputs from the value paid for the seed cotton. This system is particularly attractive to producers in countries with high inflation, such as Zimbabwe. Third, a more rigorous grading policy can be profitable, since cotton from Zimbabwe benefits from a 10 percent premium over that exported by CFA countries. Producers are induced to collect cotton with care in Zimbabwe where only 15 percent of the crop is graded A (the highest paid quality) than in CFA countries where 98 percent of the crop is graded A.

The experiences of the three Anglophone countries show that the quality of seed cotton may be adversely affected by price wars. The high premium on Zimbabwe cotton was preserved after liberalization because the two (or three) ginners were able to cooperate successfully, which was facilitated by the low level of price competition between them. By contrast, in Ghana and Tanzania where price competition was strong, grading became very loose, the seeds multiplication system became disorganized and, according to most observers, the quality of cotton suffered. In CFA

countries, there is no price competition and neither grading nor quality have yet been affected by the reforms.

The management of the cotton sector improved in Burkina with limited reforms in the late 1990s. Sofitex retained its monopoly for the purchase of seed cotton, but producers became better organized. The first step was to restrict access to cotton growers' associations to actual cotton growers, which made them more manageable and provided them with a clearer focus. The second step was to build up a five-level pyramid through which messages could be transmitted effectively from top to bottom and vice-versa. The third step was to use the surplus accumulated when prices were favorable to acquire 30 percent of the capital of Sofitex. As a result, the growers' association became a stronger partner able to negotiate with ginners and other stakeholders.

The structure of the cotton sector is more complex in Benin than in Burkina and the reforms implemented are more basic. The new decision center is the inter-profession where the various stakeholders are represented. Ginners became mere partners in a game that the monopolist was previously running. To insure that all input-credits would be recovered and all payments due would be made, the inter-profession needed an executive arm - the CRSP- which was created in 2000. Grading, research and new institutions are components of the "fonctions critiques" financed through contributions by ginners equivalent to some 10 percent of the price of seed cotton. The new system required the creation of new institutions and the strengthening of existing ones. It is heavy, but it does work and his proponents claim that it could work in a more liberalized context. It is too early to know whether the new system will lead to savings. It should be noted, however, that Benin needed large subsidies in 2001/02.

Zimbabwe is the only one of the five visited countries where the government does not intervene in the determination of producer prices. Cottco announces its price at the beginning of the season and Cargill follows suit. The price increases during the season, which is to be expected in a country where the yearly inflation rate exceeds 100 percent. As mentioned above, the two companies compete on the nature of services rendered rather than on price.

In Ghana, a price is announced at the beginning of the marketing season after a long debate organized by the government but this price is not always applied. The share of the world price received by producers fluctuated over the years but was lower than in CFA countries in seven of the last eight years. In all CFA countries, the price is announced before the start of either sowing or marketing seasons.

In Burkina, a floor price is announced before sowing and, if a profit is made at this price, producers receive a bonus in the following season; they did receive a bonus in each of the last seven years and this bonus was on average equivalent to 15 percent of the floor price. Bonuses were also given in Benin and Côte d'Ivoire, but they were smaller and less frequent.

In CFA countries, producers appear partial to the floor price and would like to know this price before sowing. Setting a floor price one year before shipping the lint is a risky proposition since prices may vary considerably during that year. The best way to deal with the problem is to combine forward sales with two-step payments by observing three principles: (i) setting the floor price based on realistic market expectations, notably by relying on prices already locked in through forward sales; (ii) incorporating a safety margin which should be wider if the floor price is announced before sowing than before marketing; and (iii) calculating the level of the second payment in a transparent manner according to changes in the CFAF value of Index A over an agreed period of time and

sharing losses or gains proportionally between producers and ginners. The calculation could be done easily from daily quotations of the euro/dollar exchange rate and Index A.

The third principle departs from the past practices which linked the bonus to the company's profit. This practice had three drawbacks: (i) calculated profits can be and have been tampered with; (ii) profits are known only after closing the books, which explains why, in Burkina and Benin, the bonus distributed in year  $t+1$  is calculated based on profits made in year  $t$ ; and (iii) private companies are reluctant to show their books.

The proposed system could be implemented quickly and would be easier to administer than the previous one. Producers could easily check whether they received their due and cotton companies would be induced to reduce their costs since they would not have to share the fruits of their savings with others.

The two-step-payment provides a protection against future price falling only up to a certain point. Beyond this level, a subsidy is needed if there is no stabilization fund. Requests for subsidies normally come when world prices reach a bottom, and a producer price has to be announced urgently in order to not delay further the opening of the marketing season. The subsidy calculated on the basis of prevailing prices would be too high if prices were to recover. The way for dealing with the price risk in setting the subsidy is similar to the one outlined in setting the floor price. It consists of linking the value of the subsidy to a specified value of Index A and, at the end of the season, adjusting the subsidy according to the difference between the specified value and the actual value.

The need for subsidies cannot be eliminated; however, subsidies should be used only as a last resort, which means that alternatives should be found to compensate growers when world prices fall sharply. Stabilization funds managed by governments did not function properly because the surplus accumulated in high price years often disappeared by the time money was needed. Funds owned jointly by producers and private cotton companies may become unmanageable. A fund managed by producers may be the only solution left and such a fund has been working reasonably well in Burkina. Producer prices (net of subsidies) would increase at a rate no lower than world prices; but producer associations would become responsible for supporting the revenues of their members when world prices fall. Producers would not be left out in good years, but they would have to protect themselves against bad years.

The world price for cotton (as measured by Index A) fell by 68 percent from May 1995 to October 2001. In terms of current US dollars, price was lower in 2001/02 than it had been in the previous thirty years. The price fall was largely due to the inroads of synthetic fibers, since their share in total fiber consumption rose from 22 percent to 59 percent in the last forty years. The slow down in world economic activity also played a role. The price fall should have led to lower production. But this compensatory effect did not occur, because producers accounting for over half of world production have been insulated from the world price fall by massive subsidies.

These subsidies have detrimental effects on the economy, since they promote production in countries with high production costs at the expense of countries with lower production costs, particularly the African countries. The impact of these subsidies in the fight against poverty is much more dramatic. In industrialized countries, the major part of the subsidies goes to large farmers living far above the poverty line. But, by depressing world prices, these subsidies reduce the export earnings of African countries thus curtailing the revenues of several millions Africans living under one dollar a day. African countries have a strong case to present to the WTO and are entitled to ask for compensation.

Their case should be heard since it is important to convince public opinion in industrialized countries of the pernicious effects of the subsidies granted by their governments to cotton producers.

The case against subsidies to cotton producers in industrialized countries is quite clear in the context of the fight against poverty. But an assessment of the impact of the reforms of the cotton sector on poverty has to be crafted with great caution for three reasons. First, reforms in the three CFA countries remain at an intermediate stage and the process followed by any of the three Anglophone countries in liberalizing their cotton sector does not provide a model that CFA countries should copy. Second, the choice of institutional structures has to be fitted to the socio-political context of the country concerned. The model best fitted to Burkina Faso may not fit Benin and vice-versa. Third, the natures of the reforms and their sequence have to be fitted to the initial conditions and the results may be affected by the quality of management as much as by the nature of the reforms. For these reasons, the study does not propose the choice a model. It does, nevertheless, suggest that whichever model is selected, a country could generally improve its performances by taking into account the experience of its neighbors and learn from the problems they have encountered.

Some broad results may be summarized as follows. In the three CFA countries, where there is no competition on producer prices, it does not appear that performances in Benin (where reforms are most advanced) were better than in Burkina Faso (where reforms are least advanced). In the three Anglophone countries, where the market has been liberalized for seven years or more, the best performer was Zimbabwe, where price competition for the purchase of seed cotton was much weaker than in Ghana and Tanzania. Liberalization gave an initial boost to production and prices received by growers, the improvement did not last. Production of the three Anglophone countries reached a peak in 1995/96, which has not been attained since, while production of the CFA countries increased by one half from 1995/96 to 2001/02.

Reforms in the three CFA countries had two common features. One was the strengthening of producers' associations, which permitted them to play a greater role in the management of the sector, whether it dealt with the choice of inputs or the quality of services. The second was the replacement of public by private agents in a number of functions.

For main conclusions emerge from the review. (i) An efficient credit system allowing small farmers to acquire quality inputs in a timely manner is a prerequisite for developing the cotton sector and reducing poverty; for this purpose, a direct link between the payment of seed cotton and the recovery of input credits has to be preserved. (ii) Performances can be improved by giving more power to growers in the management of the sector and a greater participation of the private sector. (iii) Research and extension services cannot be left under the sole responsibility of the public administration. (iv) Seed cotton has to be marketed within a regulated framework agreed upon by the industry stakeholders' organizations.

## 1. SUB-SAHARAN AFRICAN IN THE WORLD COTTON MARKET

### 1.1. The CFA zone now accounts for 12 percent of world cotton exports

Cotton is one of the rare agricultural products for which the share of Africa in world exports increased. Over the last twenty years, cotton production increased twice as fast in SSA than in the rest of the world and three times as fast in the CFA zone than in the rest of SSA (Table 1). By 2001/02, the CFA zone accounted for 12 percent of world cotton exports, second only to the US which is expected to account for 36 percent of world exports this year.

While cotton is a minor part in the economic activity of industrialized countries, it is of critical importance to a number of African countries. Cotton is the major source of export earnings for Benin and Burkina Faso and some 22 percent of the population derives their cash earnings almost exclusively from cotton in Benin. However, the price of cotton on the international market has been falling sharply. In 2001/02, it fell at its lowest level in current US dollars since 1971/72.

**Table 1: Export, Production and Yields**  
(in terms of fiber)

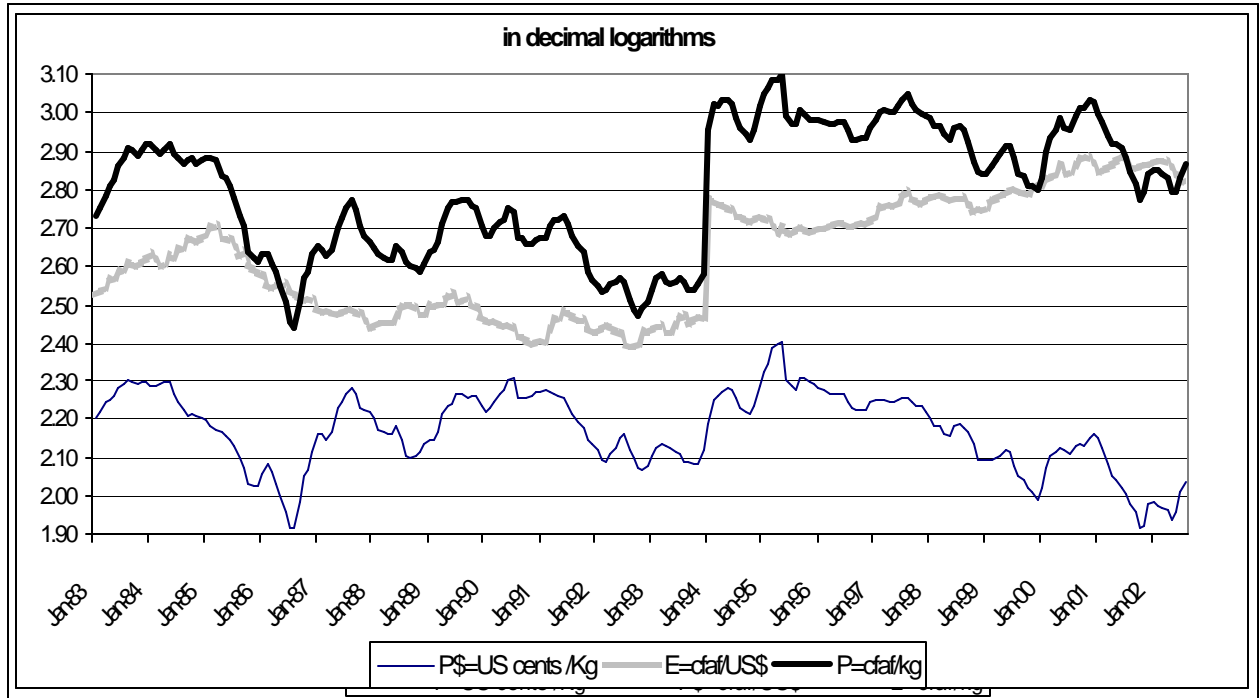
	Exports 000' met ric tons 2001/02	Production 000' metric tons 2001/02	Average growth in Production percent per year 80/81/--01/02	Yield kg per hectare 99/-01/	Average growth in Yield Percent per year 80/81--01/02
<b>World</b>	6 400	21 420	1.5%*	614	1.5%*
<b>SSA</b>	982	1452	5%*	316	2.4%*
<b>CFA</b>	735 <sup>2</sup>	1007	6.8%*	417	0.6%
<b>Non-CFA</b>	232	444	2.0%*	211	2.3%*
<b>Benin</b>	133	174	15.0%*	433	1.3%
<b>Burkina Faso</b>	126	158	7.9%*	448	0.6%
<b>Côte d'Ivoire</b>	122	173	4.4%*	556	0.5%
<b>Ghana</b>		6	10.2%*	341	4.1%
<b>Mali</b>	136	240	11.0%*	440	0.0%
<b>Tanzania</b>	34	63	0.6%	166	2.6%
<b>Zimbabwe</b>	59	75	2.2%	328	-2.1%

- Highly significant

Source : ICAC and World Bank. Yearly values of production and yields appear on Figure 2.

<sup>2</sup> Production in the CFA zone exceeded exports by 272,000 metric tons, of which 42 accounted for domestic consumption and 230 for increase in stocks (of which, 102 in Mali).

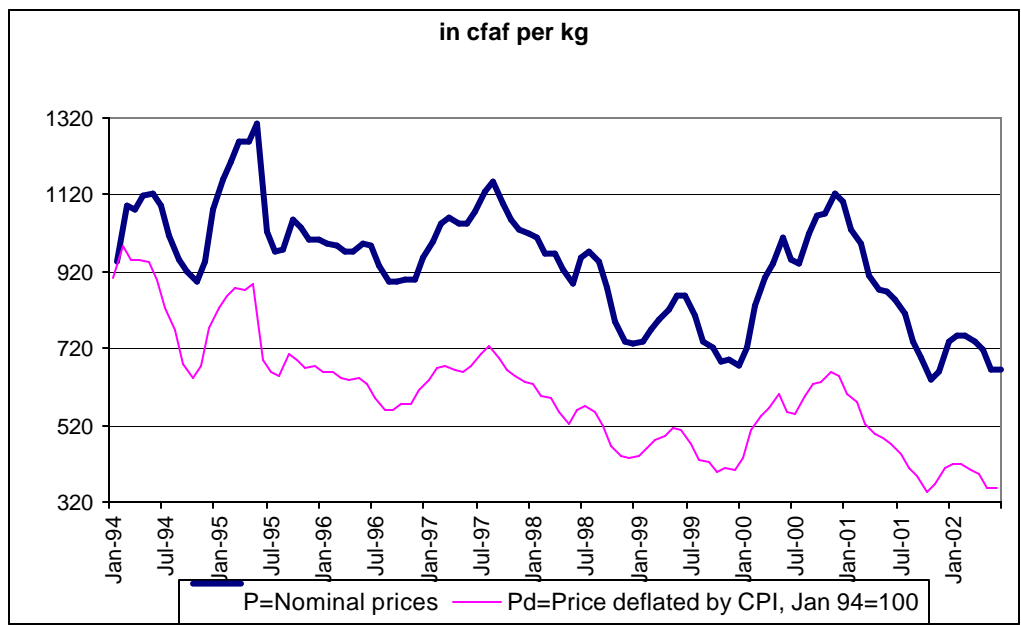
**Figure 1: Cotton Prices**  
**1A: Relative impacts of \$ prices and exchange rates**  
**Jan. 1983 - July 2002**



Source: Annex Table 21.

**1B : Nominal and deflated Prices**

**Jan.1994-June 2002**



The competitive position of the CFA zone improved considerably after the January 1994 devaluation and cotton became a very profitable crop with the increase in world prices. But high prices did not last long. From May 1995 to October 2001, the export price fell by 68 percent in dollar terms. Price fluctuations were less severe in CFA francs than in US dollars<sup>3</sup>, but the fall was steeper in real than in nominal terms. From the CFA devaluation to June 2002, prices in deflated CFA francs fell by more than 60 percent (Figure 1B)<sup>4</sup>.

## 1.2 World Prices reach record low in 2001/02

The sharp fall in world prices resulted from the combination of four factors: - long-term inroads of synthetic fibers, - recent slow-down in economic activity, - fluctuations in exchange rates and - large subsidies granted by key industrialized countries.

- (i) From 1960 to 2000, world consumption per head remained virtually unchanged for cotton, while it increased fivefold for synthetic fibers. As a result, in the last forty years, the share of synthetic fibers in total fiber consumption rose from 22 percent to 59 percent. In the last twelve years, production of polyester increased six-fold in Asia, compared with three-fold for the world as a whole.
- (ii) Due to the slow-down in world economic activity, world consumption of cotton remained virtually unchanged from 1999/00 to 2001/02, while world production rose by 12 percent (Table 2). As a result, stocks reached at end 2001/02 their highest level in 15 years, which will contain the price recovery in 2002/03. Nevertheless, the ICAC foresees a 55 cents price for 2002/03.

China and the US, the two largest producing countries which subsidize their producers, accounted for 92 percent of the increase in world production. The remaining 8 percent came from the next largest producers (India, Pakistan Uzbekistan and Turkey). Production in the rest of the world remained stable, with the large increase in the CFA zone more than offset by the decline in the Southern Hemisphere where low prices at the sowing season resulted in reduced planting.

- (iii) The appreciation (or depreciation) of the dollar in relation to the euro (or the French franc) had the effect of reducing the fluctuations of world prices expressed in CFA francs (or euros) in relation to those expressed in dollars. Thus, the price increase was reduced from 66 percent in dollars to 40 percent in CFA francs between January 1994 and May 1995, and from 52 percent to 30 percent from October 2001 to January 2003. Moreover, the fall was reduced from 68 percent in dollars to 53 percent in CFA francs from May 1995 to October 2001. It would therefore appear desirable to reconsider the possibility of establishing a future market for cotton in euros. Such a market would provide CFA countries with a price and exchange rate protection at the same time.

<sup>3</sup> A vertical logarithmic scale was used in Figure 1 to show the relative contributions of changes in dollar price (P\$) and exchange rates (E) on the price in CFA francs (P) which are linked by  $\ln P = -2 + \ln P\$ + \ln E$

<sup>4</sup> The export price (Index A) expressed in CFA francs was deflated by the average of the cost of living indexes (CPI) in Benin, Burkina, Côte d'Ivoire and Mali. Most of the difference between nominal and deflated prices occurred in the first 16 months following the devaluation.

- (iv) Over half of world production benefiting from government subsidies and the share rose to 59 percent in 2001/02<sup>5</sup>. In the last years, subsidies to cotton producers reached an average of \$4.5 billion a year, of which 75 percent for US and China, 17 percent for Greece and Spain, and 8 percent for the rest of the world. In 2001/02, subsidies were equivalent to 20 percent of the world price for China, 33 percent for the US, 58 percent for Greece and 64 percent for Spain. These high subsidies induced higher exports from the US and Greece, and lower net imports by China and Spain. The results were lower world prices and lower export revenues for African countries. Unfortunately, US subsidies are expected to rise with the adoption of the 2002 Farm Bill<sup>6</sup>.

**Table 2: World Production and Exports 1998/99 - 2002/03**

	1998/99	1999/00	2000/01	2001/02 est.	2002/03 proj.
<b>Production</b>	In million metric tons				
World	18.7	19.13	19.41	21.42	19.16
China mainland	4.5	3.83	4.42	5.32	4.42
USA	3.03	3.69	3.74	4.42	3.83
<b>Net Export</b>					
USA	0.85	1.45	1.47	2.39	2.34
Uzbekistan	0.83	0.89	0.80	0.81	0.74
CFA zone	0.82	0.84	0.69	0.74	1.01
Australia	0.66	0.70	0.85	0.70	.57
China mainland	0.07	0.34	0.04	-0.02	-0.25
Indonesia	-0.51	-0.45	-0.57	-0.55	-0.54
<b>World Ending Stocks</b>	10.35	9.56	9.27	10.63	9.23
World End Stock / Use	0.39	0.39	0.44	0.55	0.52
Index A in cents per pound	58.9	52.8	57.2	41.85	50

Source: Supply and Distribution of Cotton, ICAC August 1, 2002

<sup>5</sup> "Update to government measures affecting cotton production, ginning and trade" ICAC 11/01/01. "Cotton This Month", page 1, ICAC, May 2, 2002. "Prejudices causes par les subventions aux filières cotonnières de l'AOC" by Louis Goreux, Provisional, February 15, 2003.

<sup>6</sup> The Farm Bill is a thick document which needs to be interpreted with care. For a representative US farm, the share of government subsidy in the farmer total revenue would rise from 32% with the 1996 Bill to 45% with the 2002 Bill. "Trade distortions and cotton markets" Table 2.11, CIE, Canberra, May 2002.

### **1.3 Producers' Income in CFA countries reach record high in 2001/02**

Although world prices fell by 56 percent in dollar terms from 1994/95 to 2001/02, cotton production in the three CFA sample countries rose by 90 percent during the same period. In 2001/02, when world prices are at their bottom, producers' incomes are at their peak in Benin, Burkina and Côte d'Ivoire (Table 3).

This paradox arose for three reasons: (i) good weather led to record yields and productions in 2001/02; (ii) the fall in dollar prices was partly offset by the appreciation of the dollar in relation to the CFA franc (Figure 1A); (iii) the share of export prices received by producers rose dramatically from 30 percent in 1994/95 to 69 percent in 2001/02. Consequently, prices in CFAF received by producers hardly declined in 2001/02. Such a situation could not last without a sharp increase in world prices.

### **1.4 Cutting subsidies in rich countries would reduce poverty**

Prices paid to growers in 2001/02 were not market-clearing prices. They included a bonus of CFAF 25 per kg of seed cotton paid from the profits made the previous year in Burkina; they also included government subsidies of CFAF 45 in Benin and CFAF 15 in Côte d'Ivoire. Excluding those, the average price would have been reduced from CFAF 196 to CFAF 168, which can be considered as the break-even price. Without bonus and subsidy, this break-even point could have been reached if the export price of lint had risen by 17 percent in CFAF (excess of 196 over 168). It could have been reached with Index A at 54 cents and the euro at parity with the dollar. Few other countries are able to produce cotton at a lower cost.

If subsidies were curtailed in industrialized countries, cotton production would decline and world prices would increase. Africa would increase its world market share and would profit from higher export prices. Income would rise in the cotton belts and poverty would be reduced. The cost of production is low in the Sahel, because the remuneration of family labor is very low. This can be illustrated by a farm budget study in Burkina for a household of 14 with 7 family members working and 40 percent of the cultivated area under cotton. In 2001/02 which was an excellent year, income from cotton (net of repayment of input credits) was estimated at \$100 per worker per year<sup>7</sup>. Even after taking into account the other crops grown on the farm, household income remains very low and substantially below the national average.

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<sup>7</sup> The low level of labor remuneration can be illustrated by the cost of the haircut. In a town, next to the room where the consultants were meeting with representatives of the association of cotton producers, a barber was cutting children's hairs under a tree and was charging cfaf 100 per hair cut, equivalent to 13 US cents.

**Table 3: Basic Data, Averages for Benin, Burkina Faso and Côte d'Ivoire**

Yearly averages: 1994/95, 95/96 - 96/97, 97/98 -00/01 , 01/02; % increase 01/02 over 94/95 and 97/98-00/01 average

<sup>1</sup> Burkina only; Source: Statistical Annex

Although per capita income remains low in the cotton belt, income would have been even lower without cotton, because growing cotton is generally the most efficient way of generating cash. In the US, Australia and Brazil, growers can shift relatively easily from cotton to soybean or other crops; but the scope for substitution is much more limited in the Sahel. The main choice is between the cotton/maize mix or other cereals (in particular, niebe alone). In Mali, when growers boycotted cotton in 2000/01, cotton was not replaced by other crops.

A WHO study in Burkina found that the cotton-maize mix provided households with a greater cash income and led to a better and more balanced diet than niebe alone. The study concluded that the expansion of cotton cultivation was a major factor in improving health of households located in the cotton belt. From 1993/94 to 1997/98, cotton production increased by 175 percent and poverty incidence among cotton growers declined from 50 percent in 1992 to 42 percent in 1998, while it increased by two percentage points among subsistence farmers<sup>8</sup>.

According to a recent OECD study, “total transfers from consumers and taxpayers to farmers averaged about 30 percent of gross farm income in 2001, cost over \$300 billion (1.3 percent of GDP), and amounted to six times overseas development aid”<sup>9</sup>. Producing less cotton in industrialized countries and producing more cotton in African countries where the production cost is lower would lead to a more efficient allocation of resources at the world level. However, if subsidies to cotton producers in industrialized countries is inefficient from an economic view point, their effects on poverty in Africa are devastating. African countries are therefore entitled to present their case to WTO and request compensation for the prejudice encountered. They should publicize their case to convince public opinion in industrialized countries of the pernicious effects of the subsidies granted by their governments to cotton producers.”

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<sup>8</sup> “Analyse de la Pauvreté au Burkina Faso”, INSD, 1999, Ministère de l’Economie et des Finances.

<sup>9</sup> Quote from the 2002 IMF World Economic Outlook: “How do industrial country agricultural policies affect developing countries?”, page 81.

## 2. THE REFORM AGENDA

Before assessing reforms, it is useful to start from the monopoly model which lasted for twenty years in CFA countries and is still used in some of them. Since the model induced rapid growth (Figure 2), it had advantages which should be preserved; but it had drawbacks which have to be eliminated.

### 2.1 The Public Monopoly

Each public enterprise - CMDT in Mali, CIDT in Côte d'Ivoire, SOFITEX in Burkina and SONAPRA in Benin- was vertically integrated and benefited from a monopsony for purchasing seed cotton and from a virtual monopoly on the sale of cotton inputs. It was responsible for organizing virtually all services needed for cotton production and marketing, going from research and extension work to the sale of the fiber. In some cases, it even provided public services not directly linked to cotton, such as health and schooling.

A major advantage of the monopoly model was the provision of quality inputs (fertilizers and pesticides, in particular) under favorable credit terms. Input credits were repaid by deducting their costs from the value of the seed cotton delivered to the ginnery. Thus, if the price of seed cotton was CFAF 200 per kilogram and if the input package was worth 60, growers received only 140 at delivery. Since all ginneries were owned by the same company, producers associations could not sell their cotton to anyone else, except if they were reasonably close to a ginnery on the other side of the national boundary. Credit repayment was therefore generally very good<sup>10</sup>. The cotton company was able to obtain favorable input prices because it was placing large orders and good credit terms since it was credit worthy. The comprehensive and efficient input-credit system has been largely responsible for the rapid expansion of cotton cultivation by poor farmers in the CFA zone and it is a key feature which has to be preserved.

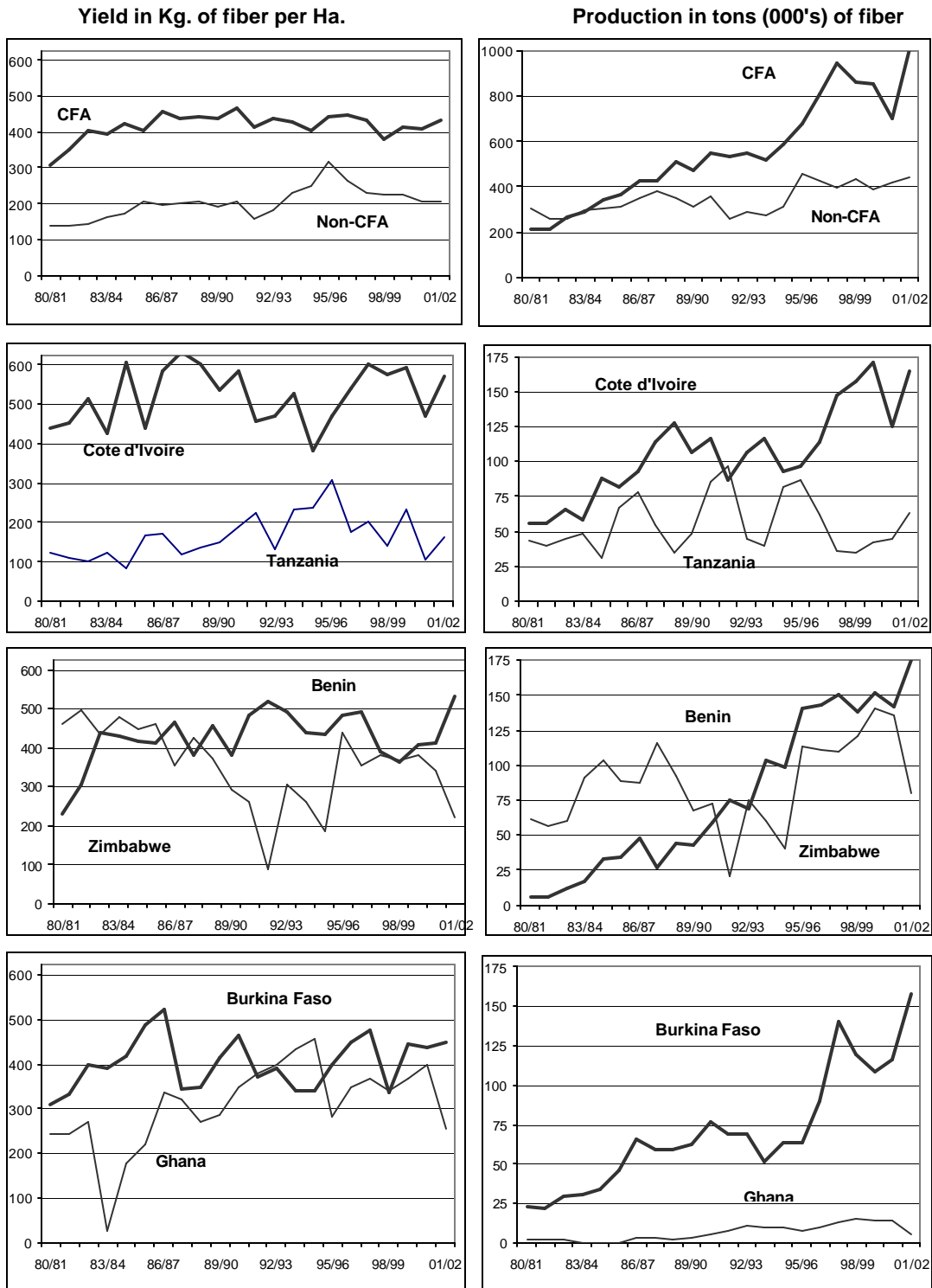
The main drawbacks were those common to most public monopolies in Africa and these drawbacks became particularly obvious when world prices were high. In the three CFA countries, producer prices accounted for only 30 percent of world prices when cotton prices reached their peak in 1994/95, and for only 44 percent in the two following years when prices remained high. Immediately after the devaluation, raising government revenues and containing inflationary pressures was critical; but producer prices remained too low for too long and part of the excess profit was not efficiently used<sup>11</sup>. Mali provides a typical example. In the four years following the devaluation, the CMDT was so profitable

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<sup>10</sup> Arrears on input credits could nevertheless occur if a village association had much less cotton to sell than foreseen when buying its inputs, either because fertilizers were applied to other crops or sold outside of the association, or because production fell much below expectations due to draught or diseases.

<sup>11</sup> On January 12, 1994, the value of the French franc increased from 50 to 100 CFA francs. The cost of servicing the external debt doubled overnight in terms of CFA francs, while government revenues did not. Raising government revenues was required for the success of the devaluation. It was probably the most difficult IMF target to reach and the growth in government revenues was closely monitored. Ultimately, the CFA devaluation was a success, as explained in the OED report "L'aide de la Banque Mondiale aux pays CFA" issued in 2001. Guaranteed producer prices for the 1993/94 crop year had been announced before the devaluation and producer prices were raised only moderately in the three following years in spite of high world prices, which left a high margin for governments. Thus, in 1996/97, taxes received by the Burkina treasury exceeded half of growers returns net of input costs (Table 4).

Figure 2: Production and Yields, 80/81 - 01/02



Source: Annex II

that it became a prime target for rent seekers and costs became heavily padded. When world prices started falling in 1998/99, the CMDT became virtually bankrupt.

## **2.2 Producers organizations in Burkina Faso**

SOFITEX did not encounter the problems of CMDT, because SOFITEX was better managed and its structure recently evolved. In September 1999, producers acquired 30 percent of the company's shares from the State; they obtained two chairs on the Board and now participate in Board discussions. Producers obtained a majority (seven seats out of 12) in the "Conseil de Gestion" which was established in June 2000 and is responsible for the review of input bids and the choice of distributors. Relations between SOFITEX and producers are good; but producer associations remain fragile, especially at the middle level (département) where they complain of insufficient support.

SOFITEX' relations with local oil and textile mills are also good. Oil mills do not complain of erratic supplies. They claim that, with the high cost of moving cottonseeds to Abidjan and the risk of penalties for quality loss during transportation, ginneries are better off by supplying local mills than by exporting.

Because the cotton sector had been cautiously managed, Burkina Faso did not have to subsidize the sector in 2001/02, while Benin and Côte d'Ivoire had to do it. Being land-locked, compare favorably with its neighbors on the efficiency front. During the last eight years, producers received on average CFAF 12 less per kg of seed cotton in Burkina Faso than in the two other countries, but this was offset the additional transportation cost from ginnery to the port estimated at about CFAF 13. Moreover, bringing inputs and equipment to the ginneries was more expensive and power was more costly in Burkina.

With increased participation of producers in its management, SOFITEX performed reasonably well in recent years. It was nevertheless decided to break its monopsonistic position and two ginneries were put up for sale. These ginneries are located in the center and east of the country at some distance of the main cotton area and they account for only 17 percent of the national ginning capacity.

## **2.3 Zoning in Côte d'Ivoire and URECOS-CI's rise to Power**

The CIDT was broken down into three units of comparable sizes in 1998 and, after a two-year transition period, the three companies have been managed independently. However, this did not lead to price competition since the price of seed cotton remained the same for the three zones. It did not lead to competition on market shares either since each company had exclusive purchasing rights within its zone. In the west, Cotton-Ivoire (a company linked to the Aga-Khan group) is probably better managed than the old CIDT was. But the opposite is true in the east, where the LCCI has accumulated payment arrears with producers and suppliers. Running three companies instead of one resulted in higher overhead expenditures which may not have been offset in 2001/02 by

The frequency of conflicts between the various actors in Côte d'Ivoire contrasted sharply with the consensual relationships found in Burkina. Producers were in conflict with ginners; they were also in conflicts among themselves, which led to the emergence of three small new producer associations. Oil and textile mills claimed that they did not receive regular supplies from ginners and the problem was considered pretty serious by textile companies, since they decided to acquire their own ginnery in order to secure their fiber supply. The group expressed its intent to purchase a

ginners presently owned by the “CIDT Nouvelle”; if that particular ginners could not be acquired, a location had already been selected to construct a new ginners.

The conflict-bound situation in the cotton sector has been fuelled by the north-south conflict which recently dominated the political landscape of Côte d’Ivoire. Two successive Heads of State and their political opponents tried to outbid each other in order to gain northern votes. In this process, the government expressed its readiness to sell 80 percent of the shares of the *CIDT nouvelle* to producers for “*un franc symbolique*”. Needless to say, the government proposal was strongly criticized by the two companies which had spent over US\$30 million each to acquire assets of comparable values; the two companies stressed that the proposed deal did not create an even playing field needed for fair competition. URECOS-CI, which is by far the most dynamic producers’ association and claims to represent 80 percent of producers, argued that it should receive 80 percent of the 80 percent shares for sale, which would provide it with a comfortable 64 percent majority. The other associations argued that each association should receive the same number of shares, which was unacceptable to URECOS-CI.

While negotiations on the purchase of CIDT nouvelle were temporarily stalled, URECOS-CI went ahead. Just in front of the LCCI’s ginners in Korhogo, it built a new ginners which will be fully operational in 2002/03. URECOS-CI also managed to import 40,000 tons of fertilizers for the 2002/03 crops through an ingenious scheme. It consisted in selling forward half of the forthcoming seed cotton crop to ginners and using the forward contracts to secure the credits needed to import the fertilizers. That scheme provided a safety margin, since fertilizers accounted for only 30 percent of the value of the crop to be produced with the fertilizers. To facilitate implementation of the scheme, a new financing institution (SOFICOCI) was created in March 2002.

URECOS-CI has also been fighting on other fronts. It argued that cotton companies should strictly limit their activities to ginning and asked for new methods of payments. Traditionally, ginners were paying village associations which were distributing the proceeds according to the quantities of seed cotton brought by each producer. In doing so, the village association had to set aside the amounts needed to finance the activities performed by the upper echelons of the association. But the “*faitière*” located at the top of the URECOS-CI pyramid wanted to be paid first, so that money would flow from the top of the pyramid to the basis, instead of bottom-up. According to URECOS-CI, ginners should not be allowed to make direct payments to village associations.

Through some type of holding, URECOS-CI could control the new Korhogo factory and the CIDT nouvelle; it could also absorb LCCI or deliver its seed cotton to LCCI mills for ginning on commission. It could soon become the major input supplier. In short, URECOS-CI could recreate a “*filière intégrée*”. Since producers would own the ginners, the thorny problem of distribution between producers and ginners would disappear; but, without appropriate checks and balances, the *faitière* could become too powerful.

## **2.4 Industry stakeholders organizations - Management in Benin**

The liberalization of the sector proceeded by steps, starting with the entry of new input providers in 1992 and new ginners in 1995. The input market was progressively liberalized with market shares opened to private investors increasing from 20 percent in 1992, to 40 percent in 1993, and 60 percent in 1994. The first private company providing cotton inputs was established in 1992; it was followed by a second one in 1993 and a third one in 1994.

High world prices and a three-fold increase in cotton production from 1989/90 to 1995/96 generated an euphoria which led to an investment boom. The three private ginneries built in 1995 were followed by two ginneries of the second generation in 1997 and three more of the third generation in 1998-99. However, since production stabilized around 350,000 tons of seed cotton from 1995/96 to 2000/01, Benin ended up with a 40 percent over-ginning capacity during that period. Because guarantees of supply had been granted to the first generation ginneries, the second and third generation ginneries operated much below capacity. The low utilization rate combined with a high ratio of borrowings over owned capital led to high financial charges for second and third generation ginneries.

With one public enterprise (SONAPRA), eight private cotton companies and an even larger number of private enterprises providing inputs for the cotton sector, three options could have been considered. The first was to allow free competition to prevail, but it was not considered desirable at the time. The second was government regulation, but this would have been in flagrant contradiction with the thrust towards liberalization. The third, which was the one selected, was to leave the regulation in the hands of the profession, also called the industry stakeholders organizations because it included representatives of the various stakeholders. This led to the creation of a number of new institutions and to the strengthening of some existing ones. Among the most important innovations, were the creation of the CSPR which is a clearing house for all financial transactions of the cotton sector and of the AIC which regroups the key stock holders. New responsibilities were also given to the CAGIA for the management of input<sup>12</sup>. With these changes, it has been possible to exclude from the 2001/02 harvest two ginners who had accumulated large payment arrears. But the market remained heavily regulated. Each ginnery was allocated a quota proportional to its installed capacity, except the three first generation ginneries which benefited from guaranteed delivery<sup>13</sup>.

In 2001/02, there was no competitive pricing since nation-wide prices were announced for the entire year regarding: (i) buying seed cotton at village gate; (ii) transporting seed cotton to ginneries; (iii) selling cotton-inputs at village gate, and; (iv) selling cottonseed at ginnery gate to the two local oil mills to satisfy their needs. These prices were discussed by the industry stakeholders organizations, but the final price was announced by the government which has the last word. This was clearly the case in 2001/02 for seed cotton.

## **2.5 Free entry led to widespread poaching in Ghana**

The sector was liberalized in 1985, which led to increased production. GCCL, the major ginner started providing inputs to farmers as “in-kind loans” in 1995 and, within a couple of years, most other ginners did the same. With greater use of fertilizers and pesticides, production increased and reached a peak in 1998/99. But, production declined steadily afterward because, with virtually free entry, poaching by small cotton companies without significant investment in the sector became widespread. Producers became unable to obtain credit for inputs and the use of fertilizers and pesticides was sharply curtailed<sup>14</sup>. By 2001/02, fiber production had fallen to six thousand tons in

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<sup>12</sup> See section 4.1.

<sup>13</sup> Some competition on market shares occurred in 2001/02, because seed cotton production exceeded expectations and, late in the season, companies were able to share the surplus supply.

<sup>14</sup> Poaching is a way of selling seed cotton without paying the input credit due. It is generally done through collusion between the buyer and the seller. For example, a grower having received inputs from well established company A does not sell his cotton to A, as he should, because A would deduct the cost of inputs. Instead, he sells his seed cotton to B who sends it for ginning to C. The fiber is then exported by B or C without repaying the input credit due to A. When the practice becomes widespread, A closes its credit facility.

2001/02 worth about \$6 million, while the cumulated debt of cotton companies to ADB, a state bank, reached \$33 million. Establishing a cotton company was nevertheless attractive, since Ghana had 12 cotton companies in March 2002 with three more applying for registration<sup>15</sup>.

The government which had almost entirely withdrawn from the management of the sector made a come back recently by promoting zoning with exclusive purchasing rights and groups of producers who would be mutually responsible for the repayment of input credits. The comeback, however, raised many problems and the situation did not improve.

## **2.6 Liberalization did not lead to price competition in Zimbabwe**

In the early 1980s, cotton production was twice as large in Zimbabwe as in Benin and Burkina combined. Commercial farmers accounted for about 80 percent of cotton production and, since they had direct access to credit, there was no need for a special input-credit scheme. The need was felt in the early 1990s, after the new regime took over and the share of small-scale farmers rose to 60 percent of total production. The input-credit scheme was established after the drastic 1991/92 drought. The average yield of small-scale farmers had fallen to 158 kg per ha from 701 kg in the previous year and it was clear that most small-scale farmers would not have the cash needed to purchase inputs for their next crop. Credits extended by the Bank and the Fund were used to launch a new credit scheme which proved very successful. Within a year, the production of small-scale farmers was back to pre-drought levels.

The cotton sector was liberalized in 1995 under the pressure of commercial farmers who resented having to subsidize the domestic textile industry. That industry had been expanding rapidly under high tariff protection in the 1980s; but, after trade sanctions against Zimbabwe were lifted in 1989, the economy was progressively liberalized. Many domestic textile mills became non-competitive and the cost of subsidizing the textile industry became very heavy. When the Cotton Marketing Board was abolished in 1995, subsidies to the textile industry were reduced; the least efficient mills closed down and the share of fiber production which had to be sold at a discount to domestic textile mills fell from 40 percent to 20 percent.

Liberalization gave a boost to the cotton sector and production recovered quickly from the 1994/95 drought. Producer prices increased initially due to competition between ginners and lower subsidies to the textile industry<sup>16</sup>. The arrival of newcomers also led to marketing improvements. When Cargill started paying producers on delivery day, other ginners had to do the same. But the improvement in producer prices did not last and poaching recently appeared.

Initially, the market was shared among three large companies (Cottco, Cotpro and Cargill) and several smaller ones. But, after absorbing Cotpro in 1999, Cottco captured 75 percent of the market and Cargill did not try to compete on the price front with the dominant player. Cottco announced its buying price at the beginning of the marketing season and Cargill generally announced a price slightly higher one week later. Cottco was the price leader and Cargill the follower. With high inflation rates, prices increased throughout the marketing season and, at the end of it, Cottco

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<sup>15</sup> The Agricultural Development Bank (ADB) is owned by the government for 52% and by the Central Bank for 48%. When someone obtains a license for creating a cotton company, he can apply for a loan from ADB. Since these loans are rarely repaid, creating a cotton company can be profitable even if the company does not do much business.

<sup>16</sup> When 40% of fiber production was sold to local mills at a 40% discount, the cotton sector provided a subsidy equivalent to 16% of the value of fiber production. By reducing these two percentages from 40% to 20%, the cost of the subsidy was cut from 16% to 4%, which had the effect of raising domestic fiber prices by 14% [ $1.14 = (100 - 4) / (100 - 16)$ ].

generally distributed a bonus. For the year as a whole, the prices paid by the two companies were very similar.

The exchange rate between the US and the Zimbabwe dollars on the parallel market was virtually the same as the official rate in 1994/95; but the Zimbabwe dollar depreciated sharply in 2001 and 2002. The premium on the parallel market rose from 11 percent in January 2000 to 100 percent in May 2001 and 500 percent in April 2002<sup>17</sup>. Until June 2000, cotton companies could exchange all their export earnings at the parallel rate. But, since October 2000, they had to sell 40 percent at the official rate before exchanging the remaining 60 percent at the parallel rate. Cotton companies exported, therefore, at a blend rate calculated as the weighted average of the official and the parallel rates. Due to the low level of price competition, ginneries did not have to pass to producers the full benefit of the blend rate. At that rate, the share of the export price received by producers fell from 51 percent in 1996/97 to 31 percent in 2000/01-2001/02.

Cargill did not want to be involved in input credit recovery, which was not an easy task. Instead, it established an ingenious barter scheme which was appreciated. When the producer brought his seed cotton for grading, he had the opportunity to return with whatever inputs he needed for his next crop and the cost of these inputs was automatically deducted from the value of the seed cotton he brought in.

Cottco was the only one providing an input credit facility and it had to fight against poaching. Before going to villages, small traders announced attractive prices, which they could afford by avoiding to clear input credits. They bought cash without grading, had their seed cotton ginned on commission (mostly at Triangle) and sold the fiber for export. With the high rate of the US dollar on the parallel market, this operation became increasingly attractive. With more traders purchasing without grading, quality could suffer which would erode the high premium enjoyed by Zimbabwe cotton. To limit poaching, Cottco screened his customers more carefully and rewarded the most credit-worthy by granting them the status of "Gold Club Members". As a result, poor farmers have a more restricted access to input credit in Zimbabwe than in Burkina.

## **2.7 Producers in Tanzania got higher prices initially, but it did not last**

Marketing and trading became open to competition in 1994 after the government abolished the monopoly previously held by the Tanzanian Cotton Marketing Board and the cooperative unions. In the three following years (1994/95-1996/97), world prices were favorable, farmers received a greater share of the export price, payment was more timely, production of seed cotton increased and many private ginneries were built. But improvements did not last. During the six following years (1997/98-2001/02), Tanzania produced only one third of what Burkina did, in sharp contrast with the 1980s when Tanzania had been producing more cotton than Burkina.

The fall in cotton production largely resulted from lower use of purchased inputs. With the 1994 liberalization, fertilizer subsidies were abolished; the Marketing Board was not anymore involved in the distribution of inputs nor in the provision of input credits<sup>18</sup>. It was expected that the

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<sup>17</sup> See Table 18D in annex.

<sup>18</sup> Savings from the abolition of fertilizer subsidies were not used to improve the services provided to farmers by government. Moreover, an appreciation of the Tanzanian shilling from 1993 to 1998 penalized agricultural exporters. "Agriculture in Tanzania since 1986, Follower or Leader of Growth" IFRI and WB, 2000.

private sector would fill the vacuum, but this did not occur as emphasized in a recent OED study<sup>19</sup>. The government became concerned and made two attempts at solving the problem. The first was to establish an Agricultural Input Trust Fund providing credit at subsidized rates, but the initiative was dropped in 1997 due to low credit recovery. The second was to create the Cotton Development Fund which was financed with a three percent levy on cotton exports: 2.5 percent was used to subsidize the purchase of inputs (chemicals and seeds) and 0.5 percent to promote research. The sales of liquid insecticides increased, but their use remained far below needs<sup>20</sup>.

Two factors are responsible for the reduced use of purchased inputs. First, the price farmers had to pay for fertilizers and pesticides increased more than the price they received for their seed cotton<sup>21</sup>. Second, the traditional distribution channel disappeared and the private sector was not ready to step in. When the production of seed cotton ceased to increase, the ginning capacity became far in excess of the needs, which stimulated poaching making the recovery of input credits more risky.

The traditional seed multiplication system collapsed after 1996 with adverse effects on the quality of the planting material. Fiber production fell sharply over the 1997/98-2000/01 period. The local textile industry nearly collapsed and cotton statistics became less reliable. Growers were paid in a more timely manner and they received a higher share of the export price<sup>22</sup>. But they had to pay more for their inputs and lacked appropriate credit facilities to purchase them. Moreover, since private traders concentrated in high producing areas, some farmers in remote eastern areas had difficulties to sell their cotton<sup>23</sup>.

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<sup>19</sup> “the Bank’s strategy appeared to be based on the assumption that once prices were liberalized and parastatals dismantled, the private sector would step in automatically to fill the vacuum (see e.g. Agricultural Sector Memorandum of FY95). This has not occurred. This problem is not unique to Tanzania: parallel reviews in other countries by OED are arriving at similar conclusions and the Bank as an institution needs to grasp with this problem.” Quote from paragraph 3.20 of “Tanzania Country Assistance Evaluation”, OED No 20902-TA, September 13, 2000.

<sup>20</sup> “The Cotton Development Fund has already ordered one million liters of insecticides for the 2001/02 farming season compared to 320,000 liters last season. However, this amount is only 25% of the required amount of 4.4 million liters. In order to bridge the gap of 3.4 million liters, the private sector has been urged to take up the courage of ordering enough insecticides and make them easily accessible to farmers at district or regional levels.” Cotton Situation in Tanzania, Statement made at the 60<sup>th</sup> Plenary Meeting of the ICAC, 17-22 September, 2001.

<sup>21</sup> Average shares of Index A received by producers increased from 41% in the six years ending 1993/94 to 50% in the six following years. From 1993/94 to 1998/99, the average cost of pesticides more than tripled in nominal terms and increased by 43% in real terms. Kabissa and Myaka paper quoted in foot note 19 below..

<sup>22</sup> As noted for Zimbabwe, the increase was partly due to lower subsidies to the local textile industry.

<sup>23</sup> “farmers in remote areas had to face lower than average prices and, at worst, no buyers for their cotton” quote from “Sustainable Cotton Production Systems: Prospects for Small Holders in Developing Countries” Paper presented by Kabissa and Myaka at the 49<sup>th</sup> ICAC Conference held in Australia in 2000.

### 3. INSTITUTIONAL CHANGES

#### 3.1 Producers gained power in cfa countries

In Burkina, farmers growing and not growing cotton were initially part of the same village association (“groupement villageois” GV). This led to the “free rider” problem, since a farmer not growing cotton could obtain fertilizers for his maize field on a credit which would be ultimately repaid by cotton growers. For this reason, GVs were replaced in the late 1990s by smaller associations limited to cotton producers who could exert strong peer pressures on those tempted by a free ride.

Farmers growing cotton in the same village formed a GPC (“*Groupement des Producteurs de Coton*”) which bought inputs on credit and sold seed cotton on account of its members. The CPG was the link between individual farmers and the SOFITEX. When a truck came to the village for collecting cotton, the GPG weighted the bundles of cotton brought by each farmer and kept records of deliveries. After having deducted the cost of inputs from the value of seed cotton, SOFITEX paid the GPC which repaid each of its members in accordance with the seed cotton he brought in and the inputs he received. The CPG, which was remunerated by SOFITEX for its services, had a president and a treasurer. Some CPG were well managed and kept very good records, others did not.

The cotton producer association (UNPCB) was organized as a five-level pyramid with some 250 thousand growers at the bottom, eight thousand CPGs at the village level, 170 departmental unions (UD) at the third level, 17 provincial unions (PU) at the fourth level and a “*faitière*” at the top. At the departmental level, some ten UD members (unremunerated except for travel) and three agents remunerated by SOFITEX shared three main missions. The first was to provide technical advice to growers. The second was to forecast the size of the coming crop. The third was to participate in the allocation of input credits and to check whether credits were timely repaid. At the top of the pyramid, the *faitière* (assisted by UPs) participated in the management of SOFITEX in its quality of co-owner with 30 percent of the shares. It was also responsible for selecting input bids since growers held seven of the 12 seats in the “*Comité de Gestion*”. The *faitière* was able to send messages top-down reaching the lowest level of the pyramid and to receive reactions from its basis quickly. The *faitière* gained credibility from this efficient communication process and its negotiating position with other stakeholders was strengthened.

The structure of cotton producers associations in Benin and Côte d’Ivoire was similar to that of Burkina. But Côte d’Ivoire had four producer associations, each with its own political connections and its own agenda; one of them (URESCO-CI) was, however, much more powerful than the others.

Producer associations were weaker in Anglophone than in Francophone countries. Ghana and Tanzania did not have a link between growers and ginners comparable to the GPC of Burkina. Cottco, in Zimbabwe, had groups of growers jointly responsible for the repayment of input credits, as GPC members were in Burkina. However, each grower was delivering his own cotton to ginneries belonging to either Cottco or Cargill and had his own account with the cotton company, while SOFITEX had an account with each GPC but no accounts with individual growers.

As private transporters acquired a greater share of the cotton market, they formed associations to defend their interests<sup>24</sup>. In Benin, input providers formed also their own associations (GPDIA and CAGIA); ginners and growers did the same (APEB and FUPRO). These various associations in Benin were regrouped into an inter-trade cotton association (AIC). The creation of new institutions was not without costs<sup>25</sup>

### 3.2 Government allocations for Research were not sufficient

Research on cotton varieties was traditionally conducted in national research institutes which were often supported by institutes abroad, such as CIRAD in France. These institutes were financed by budget allocations which covered only part of the costs. Since these allocations have been generally declining in real terms, research institutes had to increasingly rely on external assistance (such as STABEX funds) and contributions by cotton companies. In Benin, these contributions are now financed as part of the “critical functions” which were set at 10 percent of the value of seed cotton and were shared among cotton companies according to their purchases of seed cotton.

The impact of the reforms on research can be illustrated in Benin by the introduction of the new variety (H289.1) expected to become widely used in 2002/03. Before the reforms, researchers had to satisfy SONAPRA only; but, after the reforms, they had to satisfy both growers and ginners who had different desiderata. Ginners were mainly interested in ginning rates and fiber lengths, while producers were concerned with yields per acre, resistance to insects and ease of harvesting. The new variety had a length shorter than ginners would have liked, but it had a number of advantages which growers liked. Attempting to find the variety which would satisfy both parties and reaching a compromise took time; as a result, the introduction of the new seed was delayed. But, ultimately, the new variety will probably be better fitted to the country’s needs than if growers had not been involved in the selection process.

In Zimbabwe, research is conducted by the Cotton Research Institute (CRI). Quton (a private company owned by Cottco) obtained exclusive rights for marketing the new varieties produced by CRI. In exchange, Quton paid royalties to CRI which provided 35 percent of CRI’s revenues. In spite of these royalties, the CRI’s budget remained tight and a number of well qualified staff moved from CRI to Quton, where remuneration and working conditions were better. Quton was recently considering the possibility of absorbing CRI.

In Ghana, research is conducted by the Savanna Agricultural Research Institute (SARI) which does not receive any contribution from cotton companies. Being only financed through the government budget, SARI has limited resources and employs only three researchers on cotton. As a result, seeds are often imported from neighboring countries without appropriate quality control.

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<sup>24</sup>In Benin, the commercialization of seed cotton was delayed in 2001/02 by a dispute on the remuneration of private transporters. In Burkina, rail was used to move only part of the fiber output to the port; the major part was transported by private trucks. Those were also mostly used for the transport of cottonseeds. But private transporters collected only one third of the seed cotton crop in 2002. SOFITEX transported the remaining two-thirds with its pickup trucks which were more versatile than the old trucks operated by private transporters. Early in the morning, the pickup truck started from the ginnery with two empty bins; one bin was left in a village and the other in a village nearby. In the afternoon, the pickup truck collected the two full bins which were stored in the ginnery yard until being picked up by a tractor to be discharged on a rolling carpet when seed cotton was needed. Because they could not afford the expensive SOFITEX equipment, private transporters had to wait most of the day in the village while their truck was being filled up and afterward to queue at the door of the ginnery, sometimes for several days.

<sup>25</sup> The three institutions (CAGIA, AIC and CSPR) created in 1999 and 2000 had an administrative cost estimated at CFAF 2 billion a year, which represented 3% of the value of seed cotton in 2000/01.

### 3.3 Cotton needs specialized extension services and quality controls

Every cotton producing country has a public agricultural extension service. But in several of the visited countries, the long-standing freeze on new recruitment adversely affected the morale and effectiveness of the staff of the ministry. Cotton, which is a very demanding crop, cannot rely only on public services. It requires specialized extension services and the rapid expansion of cotton production in the CFA zone was partly due to the quality of the extension services provided by public cotton companies. The extension agents (called “encadreurs”) specified the various steps which growers had to follow (“*itinéraire technique*”). But, as growers became more sophisticated and gained power, they started to challenge the quality of the instructions. They also questioned whether the benefit to growers was worth the cost, knowing that growers had ultimately to pay for the services in the form of lower producer prices. It is now agreed that the producer association should have a voice in defining the nature of the extension services they need and should report on the quality of the services received. But it is not sure that producer associations should be responsible for managing these services. Drawing on an analogy, student associations should be involved in the design of university reforms, but they should not be running the university.

In Zimbabwe, specialized extension services are provided by two private companies: Cottco and Quton (a subsidiary of Cottco responsible for seed distribution). But Cottco had only 60 extension agents, while SOFITEX had 400; moreover, Cottco’s agents are largely concerned with the allocation of credits and their recovery. Cargill, which does not provide input credits, has very limited extension activities. Fortunately, Zimbabwe has the best cotton training center (CTC) in Eastern and Southern Africa. Training is very much down to earth because the CTC exploits a large farm which is commercially profitable; yields reach 1,400 kg per ha. without irrigation and 3,000 kg with irrigation. The CTC was created when cotton was mainly grown in commercial farms, but it evolved over time. Presently, the CTC trains over one thousand small-scale farmers per year, with part of the trainees coming from abroad. The two-week training is supplemented by follow-up extension work to assist trainees in applying what they learned in the center. CTC training activities are essentially financed with foreign aid.

Extension activities in Zimbabwe have been focused on small-scale farmers who now account for the bulk of cotton production and, on the whole, these activities have been successful. By contrast, extension services in Ghana have been deteriorating and, according to some reports, cotton production agents have not been helpful; a number of them have been involved poaching activities.

Seed cotton is graded when delivered to ginneries and paid accordingly. But, since 98 percent of seed cotton received the top grade (A) in CFA countries and in Ghana, grading did not induce growers to take greater care for harvesting cleaner cotton. By contrast, less than 15 percent of seed cotton is graded A in Zimbabwe and the difference partly explains why Zimbabwe cotton commands a 10 percent premium over CFA cotton. In Zimbabwe, each grower brings his own bundle for grading to the ginnery and the grade is recorded in the grower’s account. But, in CFA countries, the bundles of cotton brought by different growers are often mixed together in the same truck. As a result, the grower who brought clean cotton gets the same grade as the one who brought dirty cotton if the two lots are carried in the same truck. This does not induce growers to harvest cotton with greater care. A more rigorous grading system would require changes in delivery patterns, but it could bring higher returns to growers.

When cotton companies had a monopolistic position in CFA countries, fiber was graded in one single ginnery. This particular ginnery has remained responsible for grading in Benin and Côte d'Ivoire, although it has to test fibers from different companies, which has become a bit awkward. It would seem desirable to establish a national grading entity under the control of the profession.

In Ghana and Tanzania, quality was adversely affected by liberalization. But this was not the case in Zimbabwe, where Cottco and Cargill had their own grading facilities but agreed to apply common grading criteria.

Cotton sector reforms did not affect the ways of exporting fibers because the world export market has been and remained highly competitive. The share of fiber production exported CIF declined sharply in CFA countries. Thus, in Burkina, more than half of production was exported CIF in the three years following the devaluation; but the share had fallen to under one third in 1999/00 and the entire production was exported FOB in the last two years. By contrast, Zimbabwe exports most of its production is CIF directly to spinners who appreciate the high quality of Zimbabwe cotton.

### **3.4 Soil fertility and protection of the environment**

In CFA countries, yields increased in the 80s, but stabilized or slightly declined in the 90s. In non CFA countries, yields increased strongly through 1995/96, but declined afterward and are now about half of the CFA zone average (see Figure 2). Production increases in the last ten years were, therefore, due to area expansion, but it is generally believed that the scope for further area expansion remains large.

Because cotton is a very demanding crop, high fertilizer applications are needed to maintain soil fertility. Animal traction was the remedy frequently advocated in CFA countries not only for more timely cultural practices but, mainly, for manure applications. Purchasing animals and equipment requires medium-term lending which several companies (Coton-Ivoire, notably) intended to expand. Application of organic fertilizers was, however, seldom mentioned in Zimbabwe where cotton stalks cannot be used as organic matter since the law prescribes to burn the stalks to avoid propagating plant diseases. Another remedy is eco-culture which protects the soil cover and, thus, reduces the need for fertilizers. This technology has been applied in Brazil and the results appear promising. But neither eco-culture nor genetically modified varieties have yet been experimented with in West-Africa.

Pollution of surface water by nitrogen fertilizers has been reported in several locations. Poisoning by pesticides (in particular, by endosulfan) is a more serious concern and tighter controls on the nature and quality of imported pesticides has been recommended. Among possible ways of reducing contamination by pesticides mention was made of seed dressing for early season sucking pests and biotechnology for bollworm control.

Three conclusions may be drawn from this review of institutional changes: (i) recent developments in Burkina suggest that a cotton company with a monopolistic position and strong representation of producers can provide good services; doing so is a way to expand the company's business and to raise growers' income; (ii) in Zimbabwe, growers received adequate services and high lint quality was preserved through good cooperation between the two ginners who hardly competed on the price front; and (iii) in Tanzania and Ghana where price competition was much stronger, poaching became wide-spread, the input delivery system nearly collapsed, yields declined and lint quality suffered.

## 4. INPUT CREDIT

Cotton production requires expensive inputs and small farmers need to purchase quality inputs on favorable credit terms which, in turn, requires high credit recovery. Preserving the benefits of an efficient input credit system is, therefore, a must in reforming the cotton sector. Benin adopted an original formula in 2000 by creating the CSPR which is a clearing house insuring that input credits are recovered and all payments due are made. The objective was to preserve a major benefit resulting from the public monopoly, while replacing it by several private companies which became partners in a game which had been previously run by the monopolist.

### 4.1 The CSPR works in Benin, but marketing remains heavily regulated

Although privatization of input supply started in 1992, SONAPRA remained responsible until 1999 for storing the inputs, distributing them to villages and recovering input credits. During that period, input providers made easy money; obtaining a license was acquiring a rent and the selection process became politicized. In 1999, bid selection was transferred from SONAPRA to CAGIA (a cooperative of input providers) which attempted limiting the attribution of licenses to professionals. But dissociating the provision of inputs from the ginning activity created a problem of credit recovery. The problem was solved in 2000 by establishing the CSPR (Centrale de Sécurisation des Paiements et des Recouvrements).

The CSPR is a clearing house for all financial transactions dealing with the sale of cotton-inputs and seed cotton. On the input side, the CSPR has to register every input sale by input providers to producer groups and every credit extended for purchasing these inputs. On the output side, the CSPR has to register the sales of each producer group to each cotton company. Although they are several thousands village groups, the problem remains manageable because the data required can be collected from a small number of financial institutions, input providers and cotton companies. Financial institutions and input providers have interest in registering their credits and sales with the CSPR, since it facilitates credit recovery and reduces the risk of non-payment. Recording sales of seed cotton is a straightforward operation, since an agent of the CSP is present when the cotton is delivered and graded. The CSPR may also be represented in the village when inputs are delivered, which may avoid disputes later on the quantities which were effectively delivered.

At the beginning of the marketing season, the CSPR informs cotton companies of the maximum amount of seed cotton they are allowed to buy. After specifying the amounts they agree to buy, cotton companies have to deposit with the CSPR 40 percent of the value of the seed cotton requested before being allowed to receive seed cotton. As soon as a lot has been graded, the ginner has to pay the CSPR which, in turn, pays the producer group having delivered that lot; in both cases, the input-credit is deducted from the value of the seed cotton delivered. Since input-credits are normally lower than the 40 percent deposited by the ginner, the CSPR can clear input credits by repaying the banks at the beginning of the marketing season. With the remaining cash, the CSPR keeps some leverage over the ginner and it can pay producer groups without delay.

If every party followed the rules of the game, everyone would receive his due in time and there would be no room for cheating. But, since the CSPR is only a clearing house, it can redistribute only what it has received. If a ginner does not pay in time, arrears start accumulating. But, since a ginner should not receive seed cotton when it is in arrears, damages could be contained.

In a few occasions, this safety valve was blocked by political pressures. But, on the whole, the system worked.

Quotas allotted to each company have to be revised during the course of the marketing season for several reasons. First, quotas are calculated from the production foreseen, but actual production may be different; this was the case in 2001/02, when the estimate was raised by 18 percent in March. Second, a company excluded from the initial offering may become eligible later, if it fulfills the requirements and if some cotton remains unallocated, for example because the crop had been initially underestimated, as occurred in February 2002.

The industry stakeholders organizations allocates quotas to each cotton company and specifies the places where seed cotton has to be collected. Thus LCB (a ginnery of the group Aiglon located in the south) was given a 50,000 tons quota, of which 13 percent had to be picked up in the south (Zou), 34 percent in the north-west (Atacora) and the remaining 53 percent in the far north (Borgou). On the one hand, the “plan d’évacuation” specified the quantities which the LCB ginnery had to collect in each of 22 different locations and it provided similar instructions for each of the 15 other ginneries. On the other hand, it specified how each district should share its available supply among ginneries; thus, the Borgou district had to share its supply among 10 different ginneries spread all over the country.

The main objectives of the “plan d’évacuation” are to insure that (i) the seed cotton available in every village will be collected; (ii) every ginnery will be supplied in accordance with its quota, and; (iii) the entire crop will be delivered to ginneries as quickly as possible in order to avoid losses at the beginning of the rainy season<sup>26</sup>. A major constraint in achieving these objectives is the availability of trucks, but those have frequently to wait for several days, sometimes for over a week at ginnery gate. It would be desirable to reduce the waiting time since storing seed cotton on trucks is not an efficient use of trucks, precisely when those are in short supply. Optimizing models have been used to solve similar problems in other fields, but they are not used for minimizing costs in the “plan d’évacuation” which has to be frequently revised<sup>27</sup>.

In summary, the CSPR has achieved its main objectives in a highly regulated context. Its task has been facilitated by the existence of a single price for seed cotton, for inputs and for transportation, and the application of these prices to the entire country and the entire crop year. The CSPR represents a new type of institution which would need to be tested in a less regulated context. If every producer group was able to choose where to buy his inputs and to sell his seed cotton, the task would become more demanding.

## **4.2 Do Côte d’Ivoire and Burkina need a CSPR?**

Côte d’Ivoire did not need a CSPR in 2001/02, since each cotton company operated much in the same way as CIDT did before the breakup. However, Côte d’Ivoire would need a CSPR in 2002/03 because the exclusive purchasing agreement within zones might collapse for two reasons. First, URECOS-CI will have to supply its new Korhogo ginnery without having been allotted a zone. Second, ginning will be dissociated from input supply, since URECOS-CI imported 40,000 tons of fertilizers, accounting for half of the country’s needs. Specific provisions for the creation of a CSPR

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<sup>26</sup> Ginneries do not accept delivery of seed cotton exceeding a given degree of humidity.

<sup>27</sup> Optimizing models were used half a century ago to optimize the use of cargo ships in world war II and of cargo planes during the Berlin air-lift; those were among the first applications of linear programming models.

are not yet on the drawing board and they may not be there by October 2002, because some key players may not be interested in establishing one. URECOS-CI might feel that it could fulfill the functions of a CSPR.

Burkina will not need a CSPR before the two new zones are managed independently. It would not need one either in the transition period, if SOFITEX and the two new zones were given exclusive purchasing rights during that period.

Input supply had already been partly liberalized for some time. This has been the case for herbicides in Côte d'Ivoire since 1988. Herbicides were bought on credit by Unions which were selling them to cooperatives which, in turn, were selling them to producers, but the scheme was not very successful. On one side, producers complained of being overcharged because of commissions collected at each step of the distribution chain. On the other side, suppliers complained of payment arrears (close to CFAF6.0 billion). Arrears represent a cost for suppliers who have to recover them in some way; ultimately, cotton producers have to pay for them. In Burkina, cereals inputs and herbicides were recently purchased through cooperatives, but it was a small-scale experiment which ended with credit recovery problems.

### **4.3 The Input problem in non-CFA Countries**

In Zimbabwe, the input credit scheme was launched shortly before privatization and it was expanded by Cotpro and Cottco after privatization. This scheme became increasingly relevant with the replacement of commercial by small-scale farmers. Poaching recently became a problem in Zimbabwe and it has been a major problem in Ghana and Tanzania, and was largely due to the presence of small traders with no significant investment in the sector and no interest in the future of the sector. CFA countries may, therefore, take appropriate measures to prevent such traders from entry when they liberalize their cotton sector.

The Farmer Input Voucher system recently launched by Cargill in Zimbabwe does not provide any credit, since the cost of inputs for crop  $t+1$  is deducted from the value of crop  $t$ . But the simplicity of the scheme is attractive. It is good for the ginner who sells his goods when the buyer feels rich because he is being paid at the same time; moreover, the buyer of fertilizers today may become the seller of seed cotton next year, which will help the ginner in expanding his turnover. The deal may also be attractive to the producer who can load his inputs on the truck he used to bring his seed cotton and could return home feeling secure about his next crop.

### **4.4 Credit repayment may be hampered by drought and disease**

Because small-scale farmers in Zimbabwe do not have the resources to irrigate their fields, their yields are lower than those of commercial farmers and their yields are more dependent on rainfall levels<sup>28</sup>. From an average of 800 kg per ha in the last 30 years, the average yield of small-scale farmers fell to 158 kg in 1991/92, 335 kg in 1994/95 and a projected 524 kg in 2001/02. With an input cost equivalent to some 250 kg of seed cotton, it is clear that many farmers will not be able to repay input credits in 2001/02. Cottco will have to reschedule a number of its loans, which will increase its risk exposure.

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<sup>28</sup> Over the last 32 years, yields of small-scale farmers were correlated with the level of rainfalls in December, January and February ( $R_{sq} 0.43$ ); a 10% increase in rainfalls during these three months led to a 7% increase in yields. The correlation was much weaker for commercial farmers ( $R_{sq} = 0.04$ ), because the latter irrigated their fields whenever needed. Yields for small and large scale farms are shown for the last 8 years in Annex Table 2.

Yields are less affected by the variability of rainfalls in Burkina than in Zimbabwe, but average yield in Burkina fell in 1998/99 by 30 percent from the previous year due to the attack of the “mouche blanche”. As a result, the input bill reached 70 percent of the gross value of seed cotton in 1998/99. Many village associations did not have enough cotton to clear their input bill; credit arrears accumulated and most of them have been carried on for several years. Arrears are expected to decline to CFAF 3 billion by the end of 2001/02 which was a very good year.

Short of providing insurance against natural disasters, most of the credit arrears occurring as a result of such disasters have to be rescheduled and this needs to be taken into account in setting up credit schemes.

## 5. THE DISTRIBUTION OF PROFITS

Seed cotton is grown by a multitude of small-scale farmers and lint is exported on a competitive market. But, between farm gate and fob, most operations were controlled by a monopolist. Did producers receive a better price at farm gate when the monopolist disappeared? How was the ratio of producer over export price affected by the reforms of the cotton sector?

This issue has been approached in three ways: (i) analyzing how the costs of the various operations from farm gate to FOB evolved over the years; this approach was limited by data availability since data on costs and profits could not be obtained from private cotton companies; Burkina, where SOFITEX retained a monopoly, is the only country for which it has been possible to collect a comprehensive and consistent set of data over a seven-year period; (ii) comparing the deficits of four CFA countries in 2001/02; and (iii) calculating the ratio of producer over export prices in eight consecutive years for three CFA countries and two Anglophone countries.

### 5.1 The evolution of costs and returns in Burkina Faso

Consistent series of costs, earnings, profits and returns to stakeholders were constructed from data provided by SOFITEX for the last seven years<sup>29</sup>. For comparability, the data are presented in constant CFAF per kg of fiber, using the Burkina consumer price index as deflator (Table 4). Over the seven-year period, costs per kg of fiber have been very stable at FOB level: the highest cost in 2000/01 (CFAF 604 per kg of fiber) exceeded the lowest in 1995/96 (CFAF 573 per kg of fiber) by only 5 percent. As could have been expected, fixed costs per kg were highest (95) when production was lowest in 1995/96 and lowest (64 and 70) when production was at its peaks in 1997/98 and 2001/02; in the later year, the decline in fixed costs provided some room for increasing returns to producers. As regards composition of earnings, the most notable change was the increase in the share of cottonseeds from 2.3 percent in 1995/96 to 5.3 percent in 2001/02.

Earnings exceeded costs in every year other than 2001/02 when they fell 3 percent short of costs. Over the eight years, SOFITEX' gross and net profits averaged, respectively, 13 percent and 3 percent of earnings. The difference between gross and net profits consists of three items. The first covers special expenditures such as losses in input distribution, and those were substantial in 1996/97 and 1997/98. The second includes a provision in year *t* for the bonus distributed in year *t*+1 and a contribution for replenishing the "fonds de soutien" which provided producers with the resources needed to acquire 30 percent of the shares of SOFITEX<sup>30</sup>. The third item is a provision for BCI taxes to be paid in the following year.

<sup>29</sup> Data are final for the first six years. For 2001/02, they are SOFITEX estimates as of June 13, 2002.

<sup>30</sup> Unfortunately, the two items had to be merged in Table 4, because a breakdown was not available.

**Table 4: Burkina - Costs and Returns in CFAF per Kg. of fiber; Deflated 1995 = 100**

	95/96	96/97	97/98	98/99	99/00	00/01	01/02	Average	
	in deflated CFAF per kg of fiber								%
<b>Cost Fob</b>	<b>573</b>	<b>574</b>	<b>575</b>	<b>601</b>	<b>582</b>	<b>604</b>	<b>599</b>	<b>587</b>	<b>100</b>
<i>Producers</i>	318	349	341	337	329	324	358	336	57
<i>Producers to fiber at ginnery gate</i>	196	171	173	199	203	211	185	191	33
Purchasing	17	16	17	18	18	18	17	17	3
Transportation	24	26	28	22	21	21	21	23	4
Ginning	48	41	42	47	47	51	46	46	8
Interest	13	13	22	28	30	35	31	25	4
Fixed costs	95	76	64	84	86	87	70	80	14
<i>Ginnery to FOB</i>	56	48	50	51	51	60	52	53	9
<i>Other costs</i>	4	5	11	13	0	9	4	7	1
<i>Fob to CIF</i>	37	36	25	24	22	0	0	21	4
Costs	610	610	600	625	604	604	599	607	104
<b>Earnings</b>	<b>749</b>	<b>780</b>	<b>796</b>	<b>656</b>	<b>623</b>	<b>726</b>	<b>580</b>	<b>702</b>	<b>100</b>
Fiber	733	765	773	636	600	701	549	679	97
Cottonseeds	17	16	24	20	23	25	31	22	3
<b>Gross profits</b>	<b>139</b>	<b>170</b>	<b>196</b>	<b>31</b>	<b>19</b>	<b>122</b>	<b>-19</b>	<b>94</b>	<b>13</b>
Special Expenditures	8	19	55	12	13	5	0	16	2
Provision for Bonus	57	80	86	7	0	69	-10	41	6
Provision for BCI taxes	21	29	25	5	3	19	3	15	2
Net Profit	53	43	29	8	3	29	-13	22	3
Dividend	13	9	0	0	0	0	0	3	0
<b>Producers Gross returns</b>	<b>375</b>	<b>393</b>	<b>382</b>	<b>388</b>	<b>381</b>	<b>344</b>	<b>386</b>	<b>378</b>	<b>54</b>
Inputs	150	163	152	275	220	129	134	175	25
<b>Producers Net Returns</b>	<b>225</b>	<b>229</b>	<b>231</b>	<b>113</b>	<b>161</b>	<b>215</b>	<b>253</b>	<b>204</b>	<b>29</b>
Government taxes	69	121	88	72	77	52	35	73	10
	<b>in billion CFAF deflated 1995=100</b>								
<b>Producers Gross returns</b>	<b>24.0</b>	<b>35.4</b>	<b>53.7</b>	<b>46.2</b>	<b>41.6</b>	<b>40.0</b>	<b>61.2</b>	<b>43.2</b>	
Inputs	9.6	14.7	21.3	32.7	24.0	15.0	21.2	19.8	
<b>Producers Net Returns</b>	<b>14.4</b>	<b>20.7</b>	<b>32.4</b>	<b>13.5</b>	<b>17.6</b>	<b>25.0</b>	<b>40.0</b>	<b>23.4</b>	
Government taxes	4.4	10.9	12.4	8.6	8.3	6.0	5.5	8.0	
	<b>in deflated CFAF per Kg.</b>								
Index A	908.0	898.0	837.0	663.0	709.0	781.0	566.0	766.0	
Average export price	733	765	773	636	600	701	549	679	
	<b>in 000's tons</b>								
Fiber Production	64	90	140	119	109	116	158	114	

Source: SOFITEX, 2001/02 estimates as of 6/13/02 and Statistical Annex.

The most striking feature is that producers' returns net of purchased inputs will reach a record level (CFAF 40 billion) in 2001/02 exceeding the previous 1997/98 record (32.4 b) by 23 percent in real terms. Government has also been an important beneficiary; in three years out of seven (96/97, 98/99 and 99/00), tax revenues were equivalent to half of the net returns to producers<sup>31</sup>.

The comparison between Index A and the average export price illustrates the magnitude of the losses and gains which can be associated with forward sales. In 1995/96, the average price received by Burkina for its exports appears abnormally low in relation to Index A, but there is an explanation for it<sup>32</sup>. Burkina had sold forward most of its 1993/94 and 1994/95 crops; but the 1993/94 crop was bad (30 percent below the previous three-year average) and the 1994/95 crop was not much better. Burkina was unable to ship all the cotton sold forward before 1995/96 and, when it was finally able to do it, it was charged a late-delivery penalty equivalent to CFAF 70 per kg of fiber for its 1995/96 exports. But, by selling forward part of its 2001/02 crop before the price fall, Burkina made a substantial gain.

## 5.2 Why did Benin, Côte d'Ivoire and Mali needed subsidies and not Burkina?

In 2001/02, producers received CFAF 200 per kg of seed cotton in Burkina, Benin and Mali, and CFAF 190 in Côte d'Ivoire. Why was Burkina the only country able to manage without government subsidies? Due to the cautious price policy followed by Burkina, the cotton sector had accumulated a financial surplus at end 2000/01. This surplus enabled SOFITEX to cover a small deficit in 2001/02 and to distribute a CFAF25 bonus per kg to producers in that year. Producers in Benin and Côte d'Ivoire did not receive a bonus in 2001/02, but they had received a higher price for their cotton in the two previous years<sup>33</sup>. Mali was obviously unable to distribute a bonus, since the CMDT had a large deficit in 2000/01. The bonus does not, however, explain everything.

In 2001/02, the deficit of Benin exceeded that of Burkina by CFAF 78 per kg of fiber; the difference is reduced to CFAF49 after deducting CFAF59 for the bonus and adding CFAF30 for the lower cost of transportation from ginneries to the port (Table 5). This would imply that the cost from farm gate to ginnery gate is 22 percent higher in Benin, which appears too high. Part of the difference may be due to the fact that Burkina sold forward (at a better price) a larger share of its production than Benin did. As regards Côte d'Ivoire, it may be noted that the CFA15 subsidy per kg promised by the government may not have been paid. In Mali, the cost from farm to ginnery gates has declined during the last two years, but the CMDT has to cover financial charges higher than SOFITEX<sup>34</sup>.

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<sup>31</sup> Including TVA which is recorded as cost above the line in Table 4.

<sup>32</sup> SEMA Audit Report, pp 136-166.

<sup>33</sup> Taking the average of 1999/00 and 2000/01, the price per kg of cotton seed received by producers in Burkina was cfaf 13 lower than in Côte d'Ivoire and cfaf 16 lower than in Benin.

<sup>34</sup> See report from Waddel dated 05/13/02.

**Table 5: Projected 2001/02 Deficits in Burkina, Côte d'Ivoire, Benin and Mali**

(in current CFAF)

		<b>Burkina</b>	<b>Côte d'Ivoire</b>	<b>Benin</b>	<b>Mali</b>
Production of Seed Cotton	000' tons	378	380	415	570
Production of Fiber	000' tons	158	165	175	239
Ginning ratio	%	41.7	43.4	42.2	42.0
Producer price of seed cotton	CFAF /kg	175	190	200	200
Bonus from previous year profit	CFAF /kg	25	0	0	0
Producer price of fiber	CFAF /kg	419	438	474	476
Projected Deficit	CFAF billion	1.2	5.7	15.8	23.5
Projected Deficit	CFAF/kg of Fiber	7.6	34.6	89.9	98.2
Excess over Burkina's Deficit	Fiber	<b>0.0</b>	<b>27.0</b>	<b>82.3</b>	<b>90.6</b>
<b>Origin of excess deficit over Burkina</b>					
Producer Price	CFAF/kg of Fiber	0.0	18.6	54.8	57.0
Village to fiber at ginnery gate	CFAF/kg of Fiber	0	30	30	20
Ginnery gate to fob	CFAF/kg of Fiber	0	-30	-30	0
Others	CFAF/kg of Fiber	0	8.3	27.5	13.6

Source: Statistical Annex.

The first six rows are taken from the statistical annex. The projected deficits are taken from net profits in Table 3 for Burkina, from Alain Waddel' s estimate dated 5/13/2002 for Mali, from the budget allocation already made in Benin and from the CFAF 15 subsidy per kg of seed cotton in Côte d'Ivoire. Costs from seed cotton at village-gate to fiber at ginnery-gate are taken from Table 4 for Burkina, from various estimates for Côte d'Ivoire and Benin, and from Waddel (5/13/02) for Mali; the latter were reduced in 2001/02, but remained CFAF 20 (10%) higher than in Burkina largely on account of higher financial costs. Savings on ginnery-gate to FOB in Côte d'Ivoire and Benin are due to proximity of ginneries to the sea.

### 5.3 Impact of reforms on the share received by producers

Comparing the shares of world prices received by producers in the three CFA countries is a straightforward operation, because producer prices are measured in the same way with the same currency. It was nevertheless, considered useful to draw a distinction between two statistical series. The first relates to prices actually received by growers in each crop year. The second is adjusted to reflect actual production costs by eliminating subsidies received in 2001/02 and, in the case of Burkina and Benin, by allocating the bonuses distributed in year t+1 to year t when the profits were made (Table 6).

Starting with the average for Benin, Burkina and Côte d'Ivoire, it is clear that the share received by growers was greater in the last four years than in the previous four: the difference was 17.5 (=58.8-41.3) percentage points with unadjusted series and 13.7 (=55.8-42.1) percentage points with adjusted ones. During the last four years, growers received a greater share in Benin than in

Burkina (5.3 percentage points with non-adjusted series and 2.6 with adjusted ones); the difference could, however, reflect the lower cost of moving fiber from ginnery to the port in Benin than in Burkina (4.4 percentage points). Côte d'Ivoire also benefited from lower transportation costs than Burkina, but those savings were not reflected in higher shares for Ivorian growers. There is no evidence that earlier reforms in Benin and Côte d'Ivoire than in Burkina led to an increase in the share of the export price received by producers.

In Ghana, yearly variations in producer prices have been erratic and, in seven out of eight years, the share received by producers were lower than in CFA countries. This does not come as a surprise in view of the depressed state of the sector.

The more interesting but controversial findings are those relating to Zimbabwe. The shares shown in Table 6 are substantially lower than those reported in earlier World Bank documents because several adjustments are needed to make a valid comparison between Zimbabwe and CFA countries:

- (i) Producers in Zimbabwe have to pay more for seeds; they have to pay for transporting seed cotton to the ginnery or the depot. Those additional expenses were estimated by John Macrae to account for almost 10 percent of the producer price.
- (ii) Because grading is more strict in Zimbabwe than in CFA countries, 15 percent of the crop is graded A in Zimbabwe against 98 percent in CFA countries. As a result, the average price received by producers is 93 percent of grade A price in Zimbabwe instead of more than 99 percent in CFA countries.
- (iii) Because of better quality control, cotton from Zimbabwe is sold at a 10 percent premium over cotton from CFA countries.

Over the last two decades, the parallel rate of exchange exceeded the official one, except in 1994/95 and 1995/96. As mentioned earlier, the currency depreciated rapidly in the last two years. The premium of the parallel over the official rate increased from 11 percent in January 2000 to 100 percent in May 2001 and 500 percent in April 2002. Since October 2000, ginneries were required to remit 40 percent of their foreign exchange at the official rate, before selling the remaining 60 percent at the parallel rate which resulted in a de facto blend rate. At that rate, producers received only about 31 percent of the export price in 2000/01 and 2001/02<sup>35</sup>.

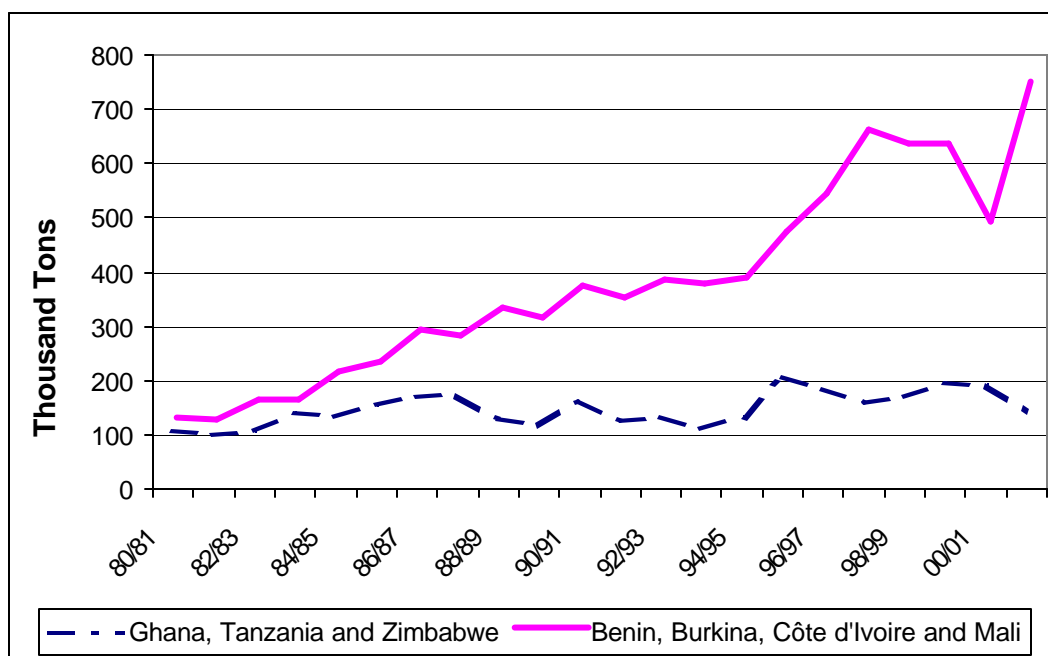
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<sup>35</sup> The calculation is shown in Annex tables 18 C and 18 D.

**Table 6: Producers prices as percentage of export prices, 1994/95 - 2001/02**

Period	Received by producers in year t							Adjusted for bonus and 01/02 subsidies			
	Benin	Burkina Faso	Côte d'Ivoire	Benin+Burkina Faso +Côte d'Ivoire	Ghana	Zimbabwe with exchange rates		Benin	Burkina Faso	Côte d'Ivoire	Benin+Burkina Faso +Côte d'Ivoire
						Official	Blend				
1994/95	34.9	24.3	29.1	29.4	10.5	44.6	44.4	34.9	29.8	29.1	31.2
1995/96	42.8	41.3	41.3	41.8	17.6	63.7	60.5	42.8	40.0	41.3	41.3
1996/97	49.8	43.8	43.4	45.6	36.7	57.5	51.1	54.8	43.8	43.4	47.3
1997/98	50.7	45.7	48.4	48.3	45.3	67.9	57.7	50.0	47.0	48.4	48.4
1998/99	71.5	58.6	59.9	63.3	72.0	64	49	70.8	58.6	59.9	63.0
1999/00	55.2	53.8	50.3	53.1	36.2	61	46	53.8	49.4	50.3	51.1
2000/01	52.1	44.0	51.9	49.3	30.4	86	33	49.5	47.9	51.9	49.7
2001/02	71.0	71.9	65.6	69.4	58.8	125	28	55.0	62.9	60.4	59.4
<b>Averages</b>											
94/95 – 97/98	44.6	38.8	40.5	41.3	27.5	58.4	53.4	45.6	40.2	40.5	42.1
98/99 – '01/02	62.4	57.1	56.9	58.8	49.3	86.6	38.8	57.3	54.7	55.6	55.8

Source: Statistical Annex Tables 18A thru 18D

**Figure 3: Fiber Production in 4 CFA and 3 non-CFA countries**

Source: Annex, Table 19B

At the blend rate, the share of export prices captured by growers was substantially higher in Zimbabwe than in the CFA countries during the four years which followed the CFA devaluation (Table 6). But the opposite occurred when world prices fell in the next four years and this finding is supported by three observations:

- (i) Cottco's guideline was to keep the cost of the input package under half of the 2000/01 expected value of the crop, instead of one third in Burkina.
- (ii) Cottco made substantial profits in 2001<sup>36</sup> according to its published annual report and this is confirmed by the results of a special sale made in that year. In order to attract commercial farmers with crops of 100 tons or more, Cargill offered them the following alternative. Instead of selling his seed cotton as before, the large-scale farmer had its seed cotton ginned on commission. Cargill was providing the same services as before, but the fiber was exported under the farmer's company name. That company was allowed to retain 60 percent of the foreign earnings and to exchange these 60 percent on the parallel market in the same way as Cargill and Cottco did. The farmers who adopted the scheme were able to earn at least 50 percent more than they would have by selling their crop as seed cotton to either Cargill or Cottco<sup>37</sup>. This suggests that small farmers did not receive the full benefit of the dual exchange rate; if they had, they would have probably captured some 50 percent of the export price measured at the blend rate instead of 30 percent.

<sup>36</sup> Cottco became a publicly traded company listed on the Stock Exchange in 1997 and, accordingly, had to issue audited annual reports.

<sup>37</sup> The Cotton Training Center, which is running a commercial farm, sold 165 tons of seed cotton under the scheme in 2001 and earned at least 60% more than it would have by selling its seed cotton to the ginner.

- (iii) After a sharp increase from 1993/94 to 1995/96 (partly due to rainfalls), production stagnated in the three Anglophone countries, while it doubled in the four CFA countries in the post-devaluation period (Figure 3). The liberalization measures implemented in 1994 and 1995 in Tanzania and Zimbabwe do not seem to have had a lasting effect in promoting cotton production<sup>38</sup>.

The liberalization of the cotton sector in 1995 did not lead to price competition because Cottco has held 75 percent of the market since 1999. But results relating to 2001 and 2002 have to be interpreted with great caution in view of the deterioration of the macroeconomic situation and the rapid depreciation of the currency. But the macroeconomic situation improved in Tanzania since the cotton sector has been liberalized in 1994 and the performance of the sector has been disappointing.

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<sup>38</sup> The performance of the cotton sector has been adversely affected in Zimbabwe by the deterioration of the macroeconomic situation, but, the macroeconomic situation has been improving in Tanzania.

## 6. PRICE DETERMINATION

In Zimbabwe, the dominant buyer announces his price at the beginning of the marketing season, adjusts it during the season and provides a bonus at the end of the season if profits are satisfactory. In Tanzania, an indicative price is announced by the Cotton Board at the beginning of the marketing season. In Ghana, a price is set after a long debate chaired by government and this price applies, in principle, to the entire season. In Burkina, a floor price is announced before sowing and, if a profit is made at this price, producers receive a bonus in the following season. In each of the last seven crop years, producers in Burkina received a bonus which represented on average 15 percent of the floor price; but they will not receive a bonus in 2002/03. Bonuses were also provided in Benin and Côte d'Ivoire, but they were smaller and less frequent; they accounted for, respectively, five percent and three percent of the floor price over the same period<sup>39</sup>.

### 6.1 The case for a floor price with two-step payments

CFA countries remain attached to the concept of a floor price and they would like to know it before sowing. Setting a floor price for seed cotton one year before shipping the lint is a risky proposition since world market prices can change considerably during that year. The best way to deal with this problem is to combine forward sales with two-step payments by observing three principles:

- (i) Basing the floor price on realistic market expectations, notably by relying on prices already locked in through forward sales<sup>40</sup>.
- (ii) Incorporating a safety margin which should be wider if the floor price is announced before sowing than if it is announced before marketing<sup>41</sup>.
- (iii) Calculating the second payment in a transparent manner according to changes in the CFAF value of Index A over an agreed period reflecting the country's trade practices. Such a calculation could be done easily from daily quotations widely available.

The third principle departs from past practices which linked the bonus to the profit of the cotton company. This practice had three drawbacks:

- (i) calculated profits could be and have been tampered with;
- (ii) profits were known only after closing the books, which is why the bonus from profits made in year t was distributed in year t+1 in Benin and Burkina. Since the bonus was

<sup>39</sup> See annex tables 9 and 10.

<sup>40</sup> Cotton options are traded on the New York Cotton Exchange, but they do not provide adequate protection for African exporters, because short-term fluctuations of US prices may differ substantially from those of Index A. Euronext has been considering the possibility of establishing an option market, which would be very convenient for CFA countries if it were set in euro. The World Bank could therefore consider assisting Euronext to assess commercial prospects for such options. But, for the time being, forward sale is the only convenient hedging instrument available and it has been widely used in Africa. Ginners are, however, advised to sell forward less than half of their expected output to avoid costly fines in case they could not fulfill their contractual obligations; as noted earlier, SOFITEX was charged heavy fines in 1995/96 for failing to fulfill its contractual obligations.

<sup>41</sup> Over the last 12 years, the ICAC forecast made at sowing time (March/April) exceeded the actual price by 11.8% on average, compared with only 6.1% and 4.5% for the forecasts made at the beginning of the marketing season (September/October, November/December). . Annex Table 20.

applied to the quantities delivered in year t+1, the practice penalized growers having produced more in year t than in year t+1 to the benefit of those having done the opposite;

- (iii) linking bonuses to the profits of cotton companies may not be feasible anymore<sup>42</sup>. Before privatization, profits data could be obtained because accounts of public enterprises had to be regularly audited; but private companies not publicly traded are not required to present annual audited reports and they are very reluctant to show their books.

The proposed system could be implemented without delay and it would be easier to administer than the previous one. Producers could easily verify if they received their due and cotton companies would be induced to reduce their costs since they would not fear having to share the fruits of their savings with others.

The average costs of SOFITEX in the last three years are used to show how the proposed system could be implemented and what would be its implications. At the start of the simulations, costs and receipts are balanced with Index A at 50 US cents a pound. Taking the euro at 90 US cents, Index A come to CFAF 804 per kg which is rounded to CFAF 800. This value is used in Table 7 as the FOB price, which simplifies the argument without affecting significantly the results of the simulations<sup>43</sup>. The costs of the cotton company cover all operations financed by the company from seed cotton collection in villages to fiber delivery FOB in African ports; they add up to CFAF 325 per kg of fiber, of which 9 percent go to taxes (BCI) and profits<sup>44</sup>. This leaves CFAF 475 for growers, which corresponds to a producer price of CFAF 200 per kg of seed cotton.

Having set the frame, we come now to the determination of the floor price. It is assumed that, when this price is announced, one third of the crop has been sold forward at CFAF 820 FOB and that the remaining two-thirds are expected to be sold at CFAF 790, which results in a CFAF 800 weighted average. The best guess at the time is, therefore, that costs and receipts will remain balanced in the coming year. But, since we do not know where volatile prices will go during the rest of the year, we want to incorporate a 15 percent safety margin in the floor price and we want returns to ginners and growers to be reduced by the same percentage if world prices fall. This is achieved by setting the floor price at CFAF 180, that is 10 percent below the 200 price expected for the entire crop year. If Index A did fall by 15 percent (the remaining two thirds of the crop being sold at 670 instead of 790), growers would not receive a second payment but subsidies would not be required; gross and net returns to growers would fall by, respectively, 10 percent and 15 percent (second column). If Index A fell by 7.5 percent, growers would receive a second payment of CFAF 10 (third column). If Index A did not fall, growers would receive 20, which would bring total payments to 200 in accordance with original expectations (fourth column). If Index A rose by 7.6 percent, growers would receive a second payment of 30 (last column).

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<sup>42</sup> The last bonus was distributed in 1999/00 in Côte d'Ivoire and 2000/01 in Benin from profits made in 1999/00.

<sup>43</sup> The shipping cost from FOB to Northern European ports has to be subtracted from Index A to obtain the FOB price, but earnings from cottonseeds have to be added to earnings from fiber in order to balance the accounts. In 2001/02, the former (cfaf 45 per kg of fiber) exceeded the latter in Burkina (cfaf 31 per kg of fiber) by cfaf 14 per kg of fiber. Consequently, a cfaf 790 FOB value should have been associated with a cfaf 804 value of Index A. The two numbers were rounded to 800 in the simulations.

<sup>44</sup> Costs for the last years averaged cfaf 298 in nominal terms; The cfaf 27 difference with the cfaf selected is the 3% going to BCI plus the 6% left for profit.

In order to implement the proposed system, we do not need to know all the numbers shown in Table 7. To determine the floor price, we need to select a safety margin (15 percent) and make our best guess at what the average sale price for the year will be (800). The latter would normally be calculated by combining receipts already locked in through forward sales (1/3 at 820) with the expected price of future sales (790). The former is known by the monopolist, but would have to be estimated by a committee if they were several private cotton companies. If the committee overestimated the share sold forward, the safety margin would be reduced<sup>45</sup>.

To determine the second payment, we only need to know the difference between the forecast (790) and the actual value of Index A. Cotton companies would be free to sell when they want and how they want, spot or forward; the company selling better or producing more efficiently would make more profit in an even playing field, which is what we want.

If growers believed that the system would be applied fairly, they might find it acceptable. A second payment in early June would come at an opportune time because, a few months before the new crops mature, farmers are short of cash and a number apply for “credits de soudure”. But the case illustrated on Table 7 was an easy one because, when the floor price was selected, the best bet was that receipts and costs would remain in balance; the floor price was only an insurance against random price falls.

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<sup>45</sup> If it were believed that one third was sold forward while nothing had been sold, the safety margin would be reduced from 15% to 10%.

**Table 7: Implementation of a floor price with forward sales and two-step payments**

	Change in Index A after setting the floor	Equilibrium	First Payment	Second Payment		
		0%	-15%	-7.50%	0%	7.60%
Average earnings from sales fob	CFAF per Kg of fiber	<b>800</b>	<b>720</b>	<b>760</b>	<b>800</b>	<b>840</b>
Average Price on 1/3 of the crop sold forward	CFAF per Kg of fiber	820	820	820	820	820
Average Price on 2/3 of the crop to be sold	CFAF per Kg of fiber	<b>790</b>	<b>670</b>	<b>730</b>	<b>790</b>	<b>850</b>
Returns to Cotton Companies	CFAF per Kg of fiber	325	292.5	309	325	341
Gross Return to producers	CFAF per Kg of fiber	475	427.5	451	475	499
Producer price	CFAF per Kg of seed cotton	<b>200</b>	<b>180</b>	190	200	210
Second payment to producers	CFAF per Kg of seed cotton	<b>0</b>	<b>0</b>	<b>10</b>	<b>20</b>	<b>30</b>
Inputs cost	CFAF per Kg of seed cotton	67	67	67	67	68
Net return to producers	CFAF per Kg of seed cotton	133	113	123	133	142
Index of gross return to producers	Equilibrium =100	100	90	95	100	105
Index of net return to producers	Equilibrium =100	100	85	92	100	107
Producer price in terms of Fiber over Index A	Percentage	59	59	59	59	59

In each of the five columns, average earnings from sales (first row) equal returns to cotton companies plus returns to producers (fourth + fifth rows).

*First Column:* At equilibrium, the FOB price (800) covers the normal cost of cotton companies (325) and producers (475 per Kg. of fiber or 200 per Kg. Assuming a 42% ginning rate of seed cotton). *Second column:* The first payment (180) without a second one preserves a balance if Index A falls by 15% by reducing returns to companies and producers by 10%. *Third column:* Index A falls by 7.5%, producers receive a second payment of 10. *Fourth column:* Index A does not fall and producers received a second payment of 20.

*Fifth column:* Index A increases by 7.6% and producers receive a second payment of 30.

When prices are expected to fall, the problem become more difficult. Thus if, at the eve of sowing, the best bet had been a 15 percent (or 30 percent) drop in Index A, adding up a 15 percent insurance premium would have reduced the floor price to CFAF 162 (or 146). Net return to growers, which is what really matters since it is what growers actually get, would have fallen by 29 percent (or 42 percent). Reducing the floor price too sharply creates political and economic risks (such as Mali's cotton boycott in 2000/01) which the society may not willing to bear<sup>46</sup>. Mali is a case in point. By mid-May 2002, when the floor price of CFAF 180 was announced, the loss was estimated at CFAF 41 per kg of seed cotton for the 2001/02 crop and foreseen as CFAF 38 per kg of seed cotton for the 2002/03 crop. It is clear that the 180 price did not incorporate any safety margin; it anticipated a subsidy.<sup>47</sup>

## 6.2 Who should bear the price risk?

The price risk is large for two reasons. First, a 3 cents decline in Index A (from 41 to 38) combined with a 3 cents increase in the value of the euro (from 92 to 95) would result in a 10 percent fall in CFAF export prices and, everything else remaining the same, it would raise Mali's deficit by CFAF 15 billion and Benin's deficit by CFAF 11 billion. Second, our forecasting ability is limited, as shown by the experience of ICAC which issues widely used bi-monthly forecasts starting two years before the end of the forecast year. The analysis of these forecasts over the last 12 years showed that forecasts were too low when the actual price was very high (1994/95), but too high when actual prices were low and the year 2001/02 fitted with this pattern<sup>48</sup>. In March/April 2001, at sowing time, Index A for crop-year 2001/02 was forecast at 57 cents, which exceeded actual price by 28 percent.

In the two-step payment simulation model (Table 7), the percentage of world prices received by growers remained unchanged (59 percent), because price risks were shared equally between the two parties. This had the advantage of simplicity and it appeared fair. Cotton companies might nevertheless resist this sharing arrangement by arguing that their scope for quickly reducing costs is very limited<sup>49</sup>. But growers do not have much scope either; inputs account for one third of their gross returns and the cost of these inputs cannot be adjusted to the current value of Index A because fertilizers and insecticides are imported one year before the lint is exported<sup>50</sup>. Moreover, small-scale growers have less means than cotton companies to deal with price uncertainty.

As shown in the simulations, the two-step payment can provide a protection against price falls, but only up to a point. Beyond it, a subsidy is needed if there is no stabilization fund. In Benin and Côte d'Ivoire, the request for subsidies came in November 2001 when Index A was at its

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<sup>46</sup> Numerous proposals have been made for setting producer prices. According to one proposal, three different prices should be set. The first would be a social price providing a minimum remuneration to growers for their labor; this price, which would define the absolute minimum, could remain unchanged for a few years. The second would be an indicative price announced at sowing time and the third would be the actual price announced at the beginning of the marketing season. Since none of these prices could be set on strictly objective grounds, their determination would lead to a series of lengthy negotiations. We would therefore favor the single floor price with two-step payments outlined above.

<sup>47</sup> One cannot be surprised that governments had an impact on the determination of the floor price in several of the countries reviewed. Australia may be the only important country where government abstains from any intervention in the pricing of seed cotton. But, cotton is grown in 1,300 very large farms producing an average of some 1,200 tons of seed cotton each.

<sup>48</sup> See Annex Table 20.

<sup>49</sup> Since provisions for depreciation are not actual expenditures, they could be postponed in accordance with approved accounting practices, which would provide some scope for adjustment.

<sup>50</sup> For this reason and because prices of fertilizers and cotton are not correlated, the cost of inputs remain unchanged in Table 7 simulations.

bottom and a minimum producer price had to be announced urgently to avoid further delays in starting the marketing season. The subsidy calculated on the basis of prevailing prices would have been too high if prices had recovered, but nobody knew, at the time, if a recovery would occur and whether it would last. The way to deal with the price risk in setting the subsidy could be similar to the one which has been outlined in setting the floor price with a two-step payment. The level of the subsidy announced at time  $t$  would be linked to a specified average CFAF value  $V$  of Index A during a specified period ( $t - t'$ ); if the actual value  $V'$  turned out to be higher than  $V$ , the subsidy would be reduced accordingly. This procedure would be simpler and more effective than requesting audits of cotton companies at the end of the season to determine whether they made undeserved profits from the subsidy.

Cotton sectors in SSA should not rely on government's subsidies and become addicted to them. Subsidies should be used only as last resort, which means that some other way should be found to compensate growers when world prices fall sharply. Stabilization funds were created for this purpose, but funds managed by governments did not work well, because surpluses accumulated in high price years were often used for purposes not originally intended and the money had disappeared by the time it was needed. A fund owned jointly by producers and several private cotton companies would be unwieldy to manage. A fund owned and managed by producers is the solution remaining.

The "*fonds de soutien*" owned by producers in Burkina has been reasonably well managed and it might be the only cotton fund in SSA not depleted by the end of 2001/02. Building on this experience, the following suggestion is made. Producer prices (net of subsidies) would increase at a rate no lower than that of world prices; but producer associations would become responsible for supporting the revenues of their members when world prices fall. Producers would not be left out in good years, but they would have to insure themselves against bad years. This could not, however, be implemented before a recovery of world prices.

### **6.3 Should the price of seed cotton be the same in the whole country?**

In Zimbabwe, producers receive the same price when they deliver their seed cotton to any ginnery or depot owned by Cottco, and Cargill follows the same policy; producers have to bear the cost of transportation from their village to the depot or the ginnery. But, in CFA countries, cotton companies collect seed cotton in villages and pay the same price wherever the village is located.

In Burkina, the cost of purchasing and transporting seed cotton to the ginnery averaged eight percent of the producer price. Suppose that this cost would have been six percent for villages close to ginneries and 11 percent for remote villages with bad access roads. Should seed cotton be paid five percent more in the first type of villages than in the second? According to the theory of comparative advantages, it should. But a five percent price differential between the two types of villages might have a limited effect on resource allocation which could be compensated by a negative social effect because growers in more remote villages are usually poorer and the economic loss could be considered as the cost of affirmative action to reduce poverty<sup>51</sup>. In a fully liberalized

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<sup>51</sup> « Impact des modes d'organisation des filières agro-alimentaires dans la lutte contre la pauvreté, les filières cacao et coton » CERDI, MAE, 06/2001.

market, better-located growers would be better remunerated and another type of affirmative action might have to be designed in favor of farmers in less desirable locations.

#### **6.4 What should be the prices for local sales?**

A reasonable principle would consist in pricing local sales at ginnery-gate on the basis of export prices minus costs from ginnery-gate to fob. If textile or oil industries needed subsidies, those should be provided directly by the government which would not loose as long as the subsidies did not exceed the taxes paid by the industry.

This principle was not applied to the textile industry in Zimbabwe which was heavily subsidized by the cotton sector in the early 1990s. As will be recalled, a major benefit of the 1995 cotton liberalization was to reduce that subsidy: prices received by cotton producers increased, the least competitive textile mills were eliminated and domestic use of cotton fiber was cut by half. The domestic textile industry became slimmer, but remained subsidized. Cargill avoided supplying local mills in 2000/01, but it may not succeed in doing so in 2001/02 because the government is threatening Cargill with not giving fiber export licenses before it supplies domestic textile mills in accordance with its allotted quota.

The principle was not applied for cottonseeds in Benin either, since ginners have not been allowed to export cottonseeds in 2001/02. Assuming that ginneries lost CFAF 10 per kg of cottonseeds by having to supply local mill instead of exporting, the government could have provided the same subsidy directly to the local mills, leaving ginners free to export or not to export. A government subsidy of CFAF 10 per kg of cottonseeds would have been equivalent to a CFAF 6.6 subsidy per kg of seed cotton. The CFAF 45 subsidy needed per kg of seed cotton would have then been reduced by CFAF 6.6. The total government outlay would have remained unchanged and resource allocation could have been improved.

According to the information provided to the consultants, the principle was applied in both Burkina and Côte d'Ivoire. However, the parties were satisfied with the arrangement in one country, but not in the other. In Côte d'Ivoire, oil and textile mills complained bitterly of unreliable supplies and each party accused the other of not respecting the specifications of the arrangement. SOFITEX sold fiber to the local textile mill at export prices minus cost from ginnery gate to fob. No problems were reported, but local sale was not a big issue in Burkina since it accounted for less than 2 percent of fiber exports, compared with 5.5 percent in Côte d'Ivoire and 25 percent in Zimbabwe. SOFITEX did not export cottonseeds; but local sales were apparently more attractive than exports in Burkina. This was not the case in Côte d'Ivoire, because the cost of moving cottonseeds from Bouake to Abidjan was less than half of moving them from Bobo to Abidjan.

## CONCLUSIONS

Reforms have been undertaken in the three CFA countries to improve efficiency in the cotton sectors. In Côte d'Ivoire and Benin, where reforms are more advanced, performances were not better so far than in Burkina. In the three Anglophone countries, the cotton sector has been liberalized for some time (15 years in Ghana, 8 years in Tanzania and 7 years in Zimbabwe). Liberalization was most successful in Zimbabwe: the arrival of a new ginner led to marketing improvements; quality standards remained very good and cotton from Zimbabwe maintained a high premium on world markets, but price competition for seed cotton remained very weak because one company (Cottco) captured 75 percent of the market. Price competition was much stronger in Ghana and Tanzania than in Zimbabwe; competition had initially a positive effect, but production has been stagnating for the last six years.

Liberalization led to higher incomes for growers in the short-term, but not in the medium term. The share of export prices received by farmers was substantially higher in Zimbabwe than in CFA countries in the four years which followed the liberalization in Zimbabwe; but the reverse occurred in the four following years when world prices fell. Recent results in Zimbabwe have to be interpreted with great caution, because the macroeconomic situation deteriorated rapidly since May 2000. But, in Tanzania where the macroeconomic situation improve markedly, the performances of the cotton sector has been disappointing. Since the cotton sectors were liberalized some eight years ago in Tanzania and Zimbabwe, production increased much faster in the three CFA countries than in the three Anglophone countries.

According to the review, no single model proved to be always superior to the others. But, whatever model is selected, a country can improve its performance by drawing lessons from the experiences of its neighbors. The report will, therefore, conclude by summarizing what did work and what did not in the countries reviewed.

1. *Public Monopolies.* Without appropriate checks and balances, public monopolies may lead to poor management, inefficiencies and rent seeking activities, as occurred in Mali in the late 1990s. Moreover, most governments wish to withdraw from productive activities which can be performed as efficiently (or more) by the private sector. For these reasons, it is generally agreed that public monopolies should be abolished.
2. *Regional Companies.* The public monopoly can be broken down regionally into several private *companies* with exclusive purchasing rights within their respective zone, as was done in Côte d'Ivoire. It does not bring true competition, but it is a way of reducing risks, because one regional company can be well managed when the other is not. Privatization of a public monopoly with the participation of public institutions, national banks and/or solid private firms may constitute a first step in the reforms and may provide satisfactory results as was the case in Burkina Faso.
3. *Giving more Power to Growers.* The management of the cotton sector in Burkina became *better* balanced in the late 1990s after growers gained more power. This was achieved in three steps: (i) restricting producers associations to cotton growers which provided a better focus for the activities of the association; (ii) acquiring 30 percent of the capital of SOFITEX and; (iii) obtaining the majority in the "*Conseil de Gestion*" responsible for the purchase of inputs.

4. *Strengthening Growers Associations.* The effectiveness of producers' associations at the village level remains hampered by low literacy rates (lower in Mali and Burkina than in Benin and lower in Benin than in Zimbabwe) and the paucity of financial resources (especially at the department level). This constraint could be partly relaxed by external assistance which is limited in a number of countries.
5. *Research.* Because the resources actually received by national research institutes from governments were meager, they had to be complemented by contributions from ginners, which is one of the reasons why research was affected by the reforms. Instead of dealing only with SONAPRA before the reforms, researchers in Benin had to deal with ginners and growers who had different desiderata. As a result, the selection of the new variety was delayed, but the seed finally distributed in 2002 was better fitted to the overall needs of the country. More (The French institute (CIRAD) has promoted exchanges between the institutes of CFA countries, but greater cooperation between African research institutes remains desirable.
6. *Seeds.* The system of seeds distribution has not yet changed in CFA countries. Before the reforms, seeds were distributed by the monopolist; after the reforms, seeds are still distributed in Benin by SONAPRA which now accounts for hardly one third of ginning. In Zimbabwe, seeds are distributed by Quton, a seed company owned by Cottco. In Ghana and Tanzania, seed multiplication systems nearly collapsed after liberalization of the sector.
7. *Extension Services.* Because cotton is a very demanding crop, growers need specialized extension services which, in the CFA zone, have been provided by cotton companies. As producers gained more power, they started to question the quality and the cost of the services provided. Since producers are ultimately paying for extension services, they should have the opportunity to state the services they need and to evaluate the quality of the services rendered. Producer associations have to participate to the management of extension services in the context of the stakeholders in the industry are the best fitted to provide extension services.
8. *Grading Seed Cotton.* Cotton from Zimbabwe is sold at a 10 percent premium over cotton from CFA countries and Ghana, which can be partly explained by differences in grading practices. Growers in Zimbabwe are induced to harvest seed cotton with greater care, because only 15 percent of seed cotton is graded A for which growers are better paid, instead of 98 percent in the other countries. Producers income could be raised if growers in CFA countries harvested cotton with greater care. It would require changes in grading practices which would have be worked jointly by ginners' and producers' associations.
9. *National Pricing.* It has been reported in Tanzania, that growers in remote areas faced difficulties in selling their cotton and had often to accept lower prices. In Zimbabwe, growers received the same price at delivery to any ginnery or depot owned by Cottco and the same was true for Cargill. But, since growers had normally to cover transportation costs to the depot or the ginnery, prices at farm gate (net of transportation costs) were slightly lower for growers located in more remote villages. In the CFA zone, prices at village gate are the same throughout the country, since cotton companies collected seed cotton at village gate and paid the same price

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<sup>52</sup> Includes input suppliers, producers' associations, ginners, manufacturers, transporters.

wherever the village was located. This practice is less efficient in terms of resource allocation, but it helps the poorest producers who are generally located in remote villages or areas with no easy access. The economic loss may be compensated by the social gain, but there is no clear answer.

10. *Yearly Pricing.* In Tanzania, the Cotton Board announces an indicative price at the beginning of the marketing season. In Zimbabwe, Cottco announces his buying price at the beginning of the season before Cargill does and the price is adjusted during the season to take account of the evolution of world prices and inflation in the country; Cottco generally distributes a bonus at the end of the season. In Ghana, a price is announced at the beginning of the season, but this price is not always applied. In CFA countries, a guaranteed price is announced at either sowing or marketing time. After closing their books, cotton companies often distributed a bonus.
11. *Curtailing Delays in Payments.* Growers are often paid with delays in CFA countries, while they are paid on delivery day in Zimbabwe. After the CIDT had been divided into three, delays were reduced in one zone but increased in another. Regarding delays in paying producers, there is room for improvement in the CFA zone.
12. *Setting Floor Price.* CFA countries remain attached to the principle of a floor price which they would like to know before sowing. But this raises a problem when world prices fall sharply as occurred in 2001/02. Most CFA countries had to subsidize their cotton sector in that year; but the level of the subsidy was not related to progress made in the reform agenda. Subsidies were highest in Mali (where the CMDT remained a public monopoly) and in Benin (where the reform agenda was most advanced), while Sofitex (still a private monopoly in Burkina) did not need government subsidies because the floor price had been selected conservatively and a financial reserve had been set aside in the previous year.
13. *Reducing the Price Risk by Combining Forward Sales with a Two-Step Payment.* Selecting a floor price 10 percent below the price foreseen would provide a 15 percent safety margin if one third of the crop had been sold when the floor price was set. In the proposed scheme, the first payment is based on the floor price, while the second payment is linked to changes in the CFA value of Index A. If Index A fell 15 percent below the value foreseen when the floor price was set, growers would not receive a second payment. But, if actual and foreseen values of Index A were the same, the second payment would be equal to the safety margin deducted in setting the floor price. In both cases, the percentage of Index A received by growers would remain the same since returns to growers and ginnerers would vary by the same percentage. Since the second payment is determined in a simple and transparent manner, growers can easily check if they received their due.
14. *Reserves or Subsidies.* If Index A fell by more than 15 percent, a deficit would remain even if growers did not receive a second payment. This deficit could be covered by drawing on reserves or by government subsidies. Growers in CFA countries, could have expected to be subsidized when world prices fell since they had received a lower share of Index A when prices were high. This was the purpose of stabilization funds managed jointly by governments, ginnerers and producers; but the resources accumulated in good years had generally disappeared by the time they were needed. This drawback could be avoided if producers were responsible of the management of the fund (as was done in Burkina Faso) and if the share of the export price received by

growers did not fall when world prices improved (as occurred frequently in the past). If Index A rose by 50 percent, growers and ginnerers would each receive 50 percent more before tax and part of these increases would be kept in reserves; one reserve would be managed by growers and the other by ginnerers (collectively or individually). Producer associations would thus accumulate reserves in good years, which would enable them to assist their members in bad years. Such a scheme would not eliminate the need for subsidies, but this need would occur much less frequently.

15. *Market Regulations are Needed.* Because cotton is an annual crop requiring large investments which have to be amortized over many years, the sector has to be liberalized cautiously. It is important to prevent entry of traders aiming at making a quick profit without concern of the future of the sector, because they have no sizable investments in it. In several countries, the entry of such traders led to poaching, credit arrears, decline in the utilization of purchased input and ultimately the stagnation of cotton production. A decade ago, it had too often been assumed that once parastatals would have been dismantled and prices liberalized, the private sector would step in automatically to fill up the vacuum. But it did not occur neither in Ghana and nor in Tanzania and, after the previous credit and distribution system had been dismantled, it proved difficult to establish a new one.
16. *The CSPR is an Original and Interesting Experiment.* The objective of the reforms in Benin was to preserve the advantages of the public monopoly after having replaced it by several private companies which became mere partners. The new decision center became the industry stakeholder's organizations with the CSPR as its executive arm. The CSPR was a clearing house for all the financial transactions of the sector. It was created to insure full recovery of input credits and timely payments. The new system is highly regulated and requires the creation of new institutions which have a cost. The system has working satisfactorily in 2001/02, but its net benefits have still to be assessed.
17. *Local Sales.* The share of cottonseeds in the earnings SOFITEX and CMDT has more than doubled in the last six years, which shows that the fiber byproducts remained undervalued for many years. Further gains can be achieved, since the demand for cattle feeding is not yet satisfied. But performances by local textile industries have generally been disappointing. Although they acquired the fiber below world market prices, they seldom succeeded in becoming internationally competitive. In Tanzania and Zimbabwe, the reduction of subsidies after liberalization of the cotton sector led to a sharp retrenchment of the local textile industry.
18. *Sequencing of Reforms.* As shown by the experience of Ghana and Tanzania, liberalizing the purchase of seed cotton can induce poaching if appropriate measures have not been taken to insure full recovery of input credits; experience has shown that, once poaching has become widespread, eliminating it is difficult. The sector can be liberalized more easily when world prices are high than when they are low. This does not mean that nothing should be done when world prices are low; it suggests that emphasis should then be placed on measures which can reduce production with minimal risks of destabilizing the sector.
19. *Main conclusions:*
  - a. An efficient credit system allowing small farmers to acquire quality inputs in a timely manner is a prerequisite for developing the cotton sector and reducing

poverty. For this purpose, a direct link must be preserved between the payment of seed cotton and the recovery of input credits.

- b. The marketing of seed cotton has to be conducted within a regulated framework established by the industry stakeholder's organizations.
- c. Research and extension services cannot be left to the sole responsibility of the public administration.
- d. The participation of producers to the elaboration of the reforms and the strengthening of producers associations are needed for successful reforms.
- e. Cotton subsidies constitute an obstacle to the fight against poverty in Africa and public opinion in industrialized countries should be made aware of the detrimental effects of the cotton subsidies granted by their governments.

## Statistical Annex

### Explanatory Notes

In accordance with ICAC practices, split-year 1994/95 starts August 1994 and ends July 1995. It covers the full marketing season in Northern Hemisphere countries, but both the planting season and part of the marketing season in Southern Hemisphere countries where the crop is harvested in 1995. Data relate to each of the five visited countries plus Mali; for convenience combined data for Benin, Burkina and Côte d'Ivoire are also shown.

Burkina is the only country for which consistent series are available; they are based on Sofitex accounts except for 1994/95<sup>53</sup>. Similar series could probably be collected for Mali; they could be obtained for Côte d'Ivoire for the first five years, but not for later years because cotton companies were very reluctant to release any cost and profit information. Series for which data were only available for Burkina are not been shown here, but they could be obtained by email.

Data relating to 2001/02 are estimates which are reasonably reliable for Northern Hemisphere countries, but not for Zimbabwe where harvest only started.

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<sup>53</sup> Accounts dated 01/14/02 with provisional data for 2000/01 and forecasts for 2001/02. For that year, data were adjusted to actual seed cotton production known end-April.

Year	Mali	Benin	Burkina	Côte d'Ivoire	B, BF, CI	Ghana	Zimbabwe		
							Small	Large	Total

### 1. Area cultivated in 000'ha

1994/95	270	230	184	242	656	22	180	34	214
1995/96	336	282	170	204	656	25	218	40	258
1996/97	420	383	196	211	790	28	268	46	314
1997/98	498	380	291	244	915	35	239	47	286
1998/99	504	380	353	271	1004	45	275	55	330
1999/00	482	370	240	291	901	38	326	43	369
2000/01	228	336	260	248	844	34	377	21	398
2001/02	505	330	356	285	971	21	357	7	364

### 2. Yields in kg of seed cotton per ha

1994/95	1085	1157	777	1136	944	1136	335	1178	467.3
1995/96	1208	1230	890	1064	1091	710	969	1827	1101
1996/97	1076	909	1092	1256	1047	870	740	1756	885.4
1997/98	1050	945	1162	1381	1130	912	764	1921	954.5
1998/99	1030	882	805	1332	976	856	827	1382	918.2
1999/00	954.4	978	1058	1357	1122	914	914	1279	956.6
2000/01	1075	1003	1062	1157	1066	992	788	1892	846.7
2001/02	1129	1258	1063	1333	1208	652	524	1857	549.5

### 3. Production of seed cotton in 000' m. tons

1994/95	293	266	143	210	619	25	60	40	100
1995/96	406	347	151	217	715	17.8	211	73	284
1996/97	452	348	214	265	827	24.5	198	80	278
1997/98	523	359	338	337	1034	32.3	183	90	273
1998/99	519	335	284	361	980	38.3	227	76	303
1999/00	460	362	254	395	1011	34.8	298	55	353
2000/01	245	337	276	287	900	33.8	297	40	337
2001/02	570	415	378.3	380	1173	14	187	13	200

Year	Mali	Benin	Burkina	Côte d'Ivoire	B, BF, CI	Ghana	Zimbabwe
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#### 4. Ginning ratio kg of fiber as percentage of kg of seed cotton

1994/95	42	36.9	43.9	44.3	41.0	40	40
1995/96	42	40.8	42.3	44.4	42.2	40	40
1996/97	42	41.2	42.1	43	42.0	40	40
1997/98	42	41.8	41.5	43.6	42.3	40	40
1998/99	42	41.2	41.8	43.4	42.2	40	40
1999/'00	42	42	42.9	43.4	42.8	40	40
2000/01	42	42.2	42.2	43.4	42.6	40	40
2001/02	42	42.2	41.7	43.4	42.4	40	40

#### 5. Cotton seed ratio kg of cotton seed sold as percentage of kg of seed cotton

1994/95	52	57.1	50.1	49.7	53.0	54	54
1995/96	52	53.2	52.4	49.6	51.9	54	54
1996/97	52	52.8	51.9	51	52.0	54	54
1997/98	52	52.2	52.5	50.4	51.7	54	54
1998/99	52	52.8	52.2	50.6	51.8	54	54
1999/'00	52	52	51.1	50.6	51.2	54	54
2000/01	52	51.8	51.8	50.6	51.4	54	54
2001/02	52	51.8	52.3	50.6	51.6	54	54

#### 6. Production of fiber in 000'm. tons

1994/95	123	98	63	93	254	10	40
1995/96	171	142	64	96	302	7.1	114
1996/97	190	143	90	114	347	9.8	111
1997/98	220	150	140	147	437	12.9	109
1998/99	218	138	119	157	413	15.3	121
1999/'00	193	152	109	171	432	13.9	141
2000/01	103	142	116	125	383	13.5	135
2001/02	239	175	158	165	498	5.6	80

#### 7. Cottonseeds sold in 000'm. tons

1994/95	152	152	72	104	328	13.5	54
1995/96	211	185	79	108	372	9.6	153.4
1996/97	235	184	111	135	430	13.2	150.1
1997/98	272	187	177	170	535	17.4	147.4
1998/99	270	177	148	183	508	20.7	163.6
1999/'00	239	188	130	200	518	18.8	190.6
2000/01	127	175	143	145	463	18.2	182
2001/02	268	215	198	192	605	7.6	108

Year	Mali	Benin	Burkina a	Côte d'Ivoire	B,BF,CI	Ghana	Zimbabwe	
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## 8. Fiber sold to local industries in 000'tons

1994/95	2	2	2	18	22	10	28
1995/96	2	2	2	20	24	8	14
1996/97	2	4	1.2	21	26.2	8	22
1997/98	2	4	1.7	24	29.7	6	31
1998/99	2	4	0.5	7	11.5	8	25
1999/00	2	5	2.3	4.2	11.5	9	19
2000/01	2	5	2.6	3.8	11.4	9	20
2001/02	1.8	5	2.7	8.6	16.3	9	20

## 9. Producer Price including bonus from year t-1 per kg of seed cotton

						Ghana		Zimbabwe		
	CFAF	CFAF	CFAF	CFAF	CFAF	cedi	CFAF	Zim \$	Official cfa	Parallel CFAF
1994/95	130	134	111	134	129	103	47	4.5	275	274
1995/96	155	165	165	173	167	190	63	5.9	307	291
1996/97	155	200	180	182	189	460	144	6.1	302	269
1997/98	170	200	179	199	193	600	160	9.3	312	265
1998/99	185	221	184	195	201	800	197	14.6	225	180
1999/00	160	185	184	174	180	700	125	18	297	209
2000/01	170	200	169	205	192	900	91	26	414	134
2001/02	200	200	199	190	196	1650	164	36	488	116

Weighted  
average

## 10. Bonus from year t-1 in CFAF per kg of seed cotton

1994/95	5				
1995/96	30		25	6.2	7.2
1996/97	30		20	6.3	7.2
1997/98	30	20	20	6.7	15.7
1998/99	40	17	25	6.3	15.4
1999/00	20	15	25	6	14.0
2000/01	10	10	10	0	6.8
2001/02	0	0	25	0	8.1
2002/03	0	0	0	0	0.0

Year	Mali	Benin	Burkina	Côte d'Ivoire	B,BF,CI	Ghana	Zimbabwe
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### 11. Producer Price including bonus per kg of fiber

						Ghana		Zimbabwe			CFAF /\$
	CFAF	CFAF	CFAF	CFAF	CFAF	cedi	CFAF	Zim \$	Official CFAF	Parallel CFAF	
1994/95	310	363	253	302	314	258	118	11	687	685	516
1995/96	369	404	390	390	397	475	158	15	767	728	504
1996/97	369	485	427	423	450	1150	359	15	756	671	560
1997/98	405	478	431	456	456	1500	400	23	779	662	610
1998/99	440	536	440	449	476	2000	493	37	563	449	584
1999/00	381	440	429	401	422	1750	313	45	743	522	665
2000/01	405	474	400	472	451	2250	228	65	1035	335	710
2001/02	476	474	477	438	464	4125	410	90	1219	289	727

### 12. Price of cottonseeds in CFAF per kgr at ginnery gate

1994/95	11	31	22	
1995/96	11	30	14	
1996/97	11	38	14	
1997/98	11	40	21	
1998/99	11	39	18	
1999/00	11	38	22	
2000/01	20	29	24	
2001/02	27.5	28	31	30

### 13. Producer gross receipts including bonus, in billion

						Ghana		Zimbabwe	
	CFAF	CFAF	CFAF	CFAF	CFAF	cedi	CFAF	Z\$	CFAF
1994/95	38.1	35.6	15.9	28.1	79.7	2.6	1.2	0.5	27.4
1995/96	62.9	57.3	25.0	37.5	119.8	3.4	1.1	1.7	82.7
1996/97	70.1	69.6	38.5	48.2	156.3	11.3	3.5	1.7	74.7
1997/98	88.9	71.8	60.5	67.1	199.4	19.4	5.2	2.5	72.3
1998/99	96.0	74.0	52.3	70.4	196.7	30.6	7.5	4.4	54.4
1999/00	73.6	67.0	46.7	68.7	182.4	24.3	4.4	6.4	74.9
2000/01	41.7	67.4	46.6	58.8	172.9	30.4	3.1	8.8	45.2
2001/02	114.0	83.0	75.3	72.2	230.5	23.1	2.3	7.2	22.6

Year	Mali	Benin	Burkina	Côte d'Ivoire	B,BF,CI	Ghana	Zimbabwe
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#### 14. Deflated Producer gross receipts including bonus, in billion

						Ghana		Zimbabwe	
	CFAF	CFAF	CFAF	CFAF	CFAF	cedi	CFAF	Z\$	CFAF
1994/95	39.9	36.6	16.1	28.9	81.6	2.6	1.2	0.5	28
1995/96	60.2	55.7	24.0	37.0	116.7	2.3	1.1	1.4	80
1996/97	65.4	64.7	35.6	46.1	146.4	6.0	3.3	1.2	70
1997/98	82.4	63.8	53.7	60.7	178.2	9.0	4.6	1.3	65
1998/99	86.8	64.3	46.2	63.2	173.7	12.7	6.7	1.5	48
1999/00	67.8	57.4	41.6	60.3	159.3	8.0	3.8	1.4	66
2000/01	37.3	54.6	40.0	49.7	144.3	7.6	2.6	1.1	38
2001/02	95.9	65.2	63.8	58.6	187.6	5.2	1.9	0.5	19

#### 15. Consumer Price Index 1995=100

	WAEMU						
94/95	95.4	97.4	98.7	97.2	97.5	100	100
95/96	104.6	102.8	104.0	101.4	102.3	146.6	121.4
96/97	107.1	107.5	108.1	104.7	106.4	187.4	144.2
97/98	107.9	112.5	112.7	110.4	110.9	214.8	190.1
98/99	110.6	115.1	113.2	111.4	112.1	241.5	301.3
99/00	108.5	116.7	112.4	114.0	113.5	302.3	469.6
00/01	111.6	123.4	116.6	118.3	117.3	401.8	830
01/02	118.8	127.2	118.0	123.2	122.8	440	1550

For CFA countries, Aug-July average. For other Countries, calendar year 95 for 94/95. 2002 projected.

#### 16. Producer Prices per kg of seed cotton deflated

						Ghana		Zimbabwe	
	CFAF	CFAF	CFAF	CFAF	CFAF	cedi	CFAF	Zim \$	Blend rate CFAF
1994/95	136	138	112	138	132	103	48	4.50	280
1995/96	148	160	159	171	163	130	61	4.84	283
1996/97	145	186	166	174	178	245	134	4.20	251
1997/98	157	178	159	180	174	279	143	4.87	236
1998/99	167	192	163	175	179	331	174	4.85	159
1999/00	147	159	163	153	159	232	109	3.83	185
2000/01	152	162	145	173	164	224	76	3.13	113
2001/02	168	157	168	154	160	375	134	2.32	95

Year	Mali	Benin	Burkina	Côte d'Ivoire	B,BF,CI	Ghana	Zimbabwe
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### 17. Producers receipts net of purchased inputs, in CFAF billion deflated

1994/95	20.5	9.0	16.2
1995/96	33.2	14.4	22.1
1996/97	37.5	20.7	26.5
1997/98	38.3	32.4	36.5
1998/99	18.7	13.5	18.4
1999/00	24.1	17.6	25.4
2000/01	34.0	25.0	31.0
2001/02	43.7	42.7	39.0

Actual data for Burkina, estimated for for the two other countries assuming purchased inputs account for the same share of receipts as Burkina.

## 18. Producer Price as Percentage of Export Price

### 18. A : CFA Countries

	Price received by producers in year t					Allocating bonus to surplus year and subtracting 2001/02 subsidies					Index A
	Mali	Benin	Burkina	C-I	Ben,BF and CI	Mali	Benin	Burkina	C-I	Ben,BF and CI	cfa/kg
1994/95	29.73	34.9	24.3	29.1	29.4		34.9	29.8	29.1	31.2	1041
1995/96	39.09	42.8	41.3	41.3	41.8		42.8	40.0	41.3	41.3	944
1996/97	37.87	49.8	43.8	43.4	45.6		54.8	43.8	43.4	47.3	974
1997/98	42.93	50.7	45.7	48.4	48.3		50.0	47.0	48.4	48.4	943
1998/99	58.69	71.5	58.6	59.9	63.3		70.8	58.6	59.9	63.0	751
1999/00	47.78	55.2	53.8	50.3	53.1		53.8	49.4	50.3	51.1	797
2000/01	44.47	52.1	44.0	51.9	49.3		49.5	47.9	51.9	49.7	910
2001/02	71.35	71.0	71.9	65.6	69.4	56.7	55.0	62.9	60.4	59.4	667
Average	46.49	53.5	47.9	48.7	50.0		51.4	47.4	48.1	48.9	

### 18. B : Ghana

	Producer Price	cedi/\$, first	Producer Price	Index A	Percentage
	Cedi / kg	quarter t+1	US cents / kg		
1994/95	103	1130	22.8	216.8	10.5
1995/96	190	1516	31.3	177.6	17.6
1996/97	460	1794	64.1	174.7	36.7
1997/98	600	2289	65.5	144.5	45.3
1998/99	800	2370	84.4	117.2	72.0
1999/00	700	3716	47.1	130.2	36.2
2000/01	900	7000	32.1	105.8	30.4
2001/02	1650	7500	55.0	93.6	58.8

In view of the rapid depreciation of the cedi, the exchange rate used was the one prevailing in the first quarter of year t+1 when the bulk of the crop is delivered to ginneries. Thus, 103 is the average exchange rate in the first quarter of 1995.

## 18. C: Zimbabwe

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Grade A. Price	Extra charge	Net Pro. Price	Exchange Rate		Index A	Percentage of	
				Official	Blend	yeart+1	1.1 * Index A	
1994/95	4.5	0.5	4	8.46	8.49	216.8	44.6	44.4
1995/96	5.87	0.54	5.33	9.63	10.15	177.6	63.7	60.5
1996/97	6.05	0.55	5.5	11.2	12.61	174.7	57.5	51.1
1997/98	9.26	0.57	8.69	18.11	21.32	144.5	67.9	57.7
1998/99	14.6	1.32	13.28	37.91	47.49	117.2	64	48.8
1999/00	18	1.42	16.58	44.4	57.28	130.2	61	45.5
2000/01	26	2.61	23.39	54.85	137.84	105.8	86	32.8
2001/02	36	5.97	30.03	54.85	232	93.55	125	28.3

- (1) For the first five years, weighted averages of final prices ( $= .75 * \text{Cottco} + .15 * \text{Cotpro} + .15 * \text{Cargill}$ ) taken from Table 1 page 11, CDR working paper 01.1, by Marianne Larsen. Data provided to the Mission for the last three years. For 2001/02, the producer price is the opening one.
- (2) Excess of costs paid by producers in Zimbabwe over those paid by producers in CFA countries. The excess relating to seeds, transport and woolpacks was estimated by John Macrae.
- (3) = (1) - (2)
- (4) Official Exchange rate from IFS
- (5) Parallel Exchange rate given in the Global Currency Report for the first five years, by IMF desk economist for 1999/00 and obtained during the mission for the last two years. Until February 2000 exporters were allowed to retain the full amount of their export earnings. The retention rate was reduced to 50% for a few weeks (when few transactions were made) and raised to 75% from March until October 2000 when it was reduced to 60% (see Table 50. D). For the last three years, the blend rate is an average of the official and parallel rates weighted by retention rates.
- (6) For split years, Index A is taken as the average of the second year when most trade transactions occur. Thus, for 1994/95, the calendar year average 1995 is used.
- (7) and (8) Index A is multiplied by 1.1 to take into account the 10% premium of Zimbabwe cotton over cotton from the CFA zone. Because the average price paid to growers is 93% of Grade A price in Zimbabwe against 99% in CFA countries, Grade A price has been reduced by 6% for comparability with CFA countries. Consequently, the following formula were applied: (7) =  $(213.6) * (3) / (4) * (6)$  and (8) =  $(213.6) * (3) / (5) * (6)$
- With  $213.6 = 94 / (.4 * 1.1)$

### Cottco : Average price paid as percentage of Grade A Price

	Shares	Shares	Prices	Prices
	2000	2001	2000	2001
Grade A	12.86	14.8	100	100
Grade B	42.05	40.3	97	98
Grade C	33.15	34.5	96	97.3
Grade D	11.94	10.4	66	54
Total	100	100	93.35	92.77

**18. D: Zimbabwe: Official, Parallel and Blend Exchange Rates**  
(Jan.00-May 02)

Month	Official Rate	Parallel Rate	Retention Rate	Blend Rate	Blend/official	Annual official	Annual Blend	Blend/Official
	Zim/ US\$	Zim/ US\$		Zim/ US\$		Zim/ US\$	Zim/ US\$	
Jan-00	38.2	42.5	1.0	42.5	1.11	44.40	56.4	1.3
Feb-00	38.2	45.5	1.0	45.5	1.19			
Mar-00	38.2	48.0	1.0	48.0	1.26			
Apr-00	38.2	50.0	1.0	50.0	1.31			
May-00	38.2	55.0	1.0	55.0	1.44			
Jun-00	38.2	60	1	60	1.57			
Jul-00	38.2	62.0	0.8	56.1	1.47			
Aug-00	49.5	65.0	0.8	61.1	1.23			
Sep-00	52.1	67.0	0.8	63.3	1.21			
Oct-00	54.1	69.0	0.6	63.0	1.17			
Nov-00	54.9	72.0	0.6	65.1	1.19			
Dec-00	54.85	75	0.6	66.94	1.22			
Jan-01	54.9	77.0	0.6	68.1	1.24	54.85	137.3	2.5
Feb-01	54.9	80.0	0.6	69.9	1.28			
Mar-01	54.9	85.0	0.6	72.9	1.33			
Apr-01	54.9	90.0	0.6	75.9	1.38			
May-01	54.9	110.0	0.6	87.9	1.60			
Jun-01	54.85	145	0.6	108.94	1.99			
Jul-01	54.9	150.0	0.6	111.9	2.04			
Aug-01	54.9	350.0	0.6	231.9	4.23			
Sep-01	54.9	250.0	0.6	171.9	3.13			
Oct-01	54.9	300.0	0.6	201.9	3.68			
Nov-01	54.9	350.0	0.6	231.9	4.23			
Dec-01	54.85	320	0.6	213.94	3.90			
Jan-02	54.9	330.0	0.6	219.9	4.01	54.85	231.9	4.2
Feb-02	54.9	320.0	0.6	213.9	3.90			
Mar-02	54.9	320.0	0.6	213.9	3.90			
Apr-02	54.9	330.0	0.6	219.9	4.01			
May-02	54.9	450.0	0.6	291.9	5.32			
Jun-02	54.9	709	0.6	472	8.6			
Jul-02	54.9	685	0.6	462	8.42			
Aug-02	54.9	685	0.6	462	8.42			

*Source : Official rates from IFS. Parallel market rates from IMF Resident Mission; from Techfin Research Services*

## 19. Yield and Production (1980/81-2001/02)

### 19. A. Yield in Kg. of fiber per hectare

	CFA Zone	Other SSA	Benin	Burkina Faso	Côte d'Ivoire	Ghana	Mali	Tanzania	Zimbabwe
1980/81	305	141	231	311	441	245	397	123	459
1981/82	351	141	304	332	453	245	481	108	497
1982/83	402	144	438	400	512	269	510	99	435
1983/84	393	161	430	392	428	27	525	123	481
1984/85	422	171	418	418	606	179	464	84	447
1985/86	402	204	413	489	438	221	460	168	462
1986/87	459	196	465	522	584	337	517	173	356
1987/88	438	200	380	344	631	320	504	120	427
1988/89	441	208	456	347	601	272	511	135	371
1989/90	440	191	383	416	534	285	521	150	293
1990/91	465	204	482	465	583	348	558	189	262
1991/92	414	158	518	373	456	381	531	223	88
1992/93	440	184	492	392	471	397	547	131	304
1993/94	427	232	439	339	527	435	500	233	261
1994/95	404	247	436	341	383	455	475	238	187
1995/96	441	315	482	400	472	284	504	307	440
1996/97	445	264	492	451	542	350	451	177	354
1997/98	433	232	388	476	601	369	437	200	382
1998/99	380	224	363	338	577	340	430	140	367
1999/00	411	224	408	445	592	366	408	231	383
2000/01	407	207	413	438	471	397	446	104	339
2001/02 est.	432	204	531	449	571	255	467	162	220

### 19. B. Production in '000s of m. tons of fiber

	CFA Zone	Other SSA	Benin	Burkina Faso	Côte d'Ivoire	Ghana	Mali	Tanzania	Zimbabwe	Ghana, Tanzania and Zimbabwe	Benin, Burkina, Côte d'Ivoire and Mali
1980/81	216	303	6	23	56	2	41	43	62	107	126
1981/82	210	258	6	22	56	2	38	40	56	98	122
1982/83	264	258	12	29	66	2	50	44	60	106	157
1983/84	293	296	17	30	58	0	55	48	91	139	160
1984/85	346	304	33	34	88	0	55	31	103	134	210
1985/86	367	314	34	46	82	0	67	67	89	156	229
1986/87	424	348	48	66	93	3	79	78	87	168	286
1987/88	423	378	27	59	114	3	75	54	116	173	275
1988/89	513	350	44	59	128	2	97	35	92	129	328
1989/90	474	309	43	62	107	3	99	48	67	118	311
1990/91	548	358	59	77	116	5	115	85	72	162	367
1991/92	533	260	75	69	87	8	114	96	21	125	345
1992/93	547	289	69	69	106	11	135	45	75	131	379
1993/94	519	275	103	51	116	10	101	40	60	110	371
1994/95	585	313	98	63	93	10	128	82	40	132	382
1995/96	683	455	141	64	96	7.1	169	87	114	208.1	470
1996/97	810	429	143	90	114	9.8	190	62	111	182.8	537
1997/98	950	397	150	140	147	12.9	218	36	109	157.9	655
1998/99	861	432	138	119	157	15.3	217	35	121	171.3	631
1999/00	859	387	152	109	171	13.9	197	42	141	196.9	629
2000/01	704	420	142	116	125	13.5	102	45	135	193.5	485
2001/02	1008	444	175	158	165	5.6	239	63	80	143.6	745

Source: ICAC & WB

## 20. ICAC Forecasts of the Cotlook A Index 1990/1991 through 2001/2002

Forecast	May/ Jun	Jul/ Aug	Sep/ Oct	Nov/ Dec	Jan/ Feb	Mar/ Apr	May/ Jun	Jul/ Aug	Sep/ Oct	Nov/ Dec	Jan/ Feb	Mar/ Apr	May /	Jul/ Aug	Actual
Months before end of forecast Year.	27	25	23	21	19	17	15	13	11	9	7	5	3	1	
<b>Cents per Pound</b>															
90/91	82	83	84	85	85	85	85	87	86	84	86	87	84	83	82.9
91/92	83	87	85	80	79	80	80	76	80	77	77	74	74	63	63.0
92/93	75	71	76	73	72	69	65	67	70	73	75	75	77	58	67.7
93/94	64	65	68	73	74	75	76	64	67	68	72	74	77	71	70.6
94/95	80	68	70	73	76	78	81	83	77	77	88	94	92	93	94.3
95/96	84	80	79	77	90	91	92	86	86	83	86	87	86	86	85.6
96/97	88	84	79	72	75	76	74	75	75	77	80	81	79	79	78.5
97/98	75	72	77	79	80	82	82	82	83	79	79	79	72	72	72.2
98/99	81	80	80	75	77	76	72	73	73	71	64	64	64	60	58.9
99/00	76	76	73	74	74	73	73	59	59	50	50	53	53	53	52.8
00/01	74	58	58	54	55	62	62	58	62	66	65	60	57	57	57
'01/02	64	66	71	73	71	55	59	54	46	47	45	44	43	43	42.8
<b>Forecast Errors as Percent of Actual Price</b>															
90/91	-1.1	0.1	1.3	2.5	2.5	2.5	2.5	4.9	3.7	1.3	3.7	4.9	1.3	0.1	2.2
91/92	31.6	38.0	34.8	26.9	25.3	26.9	26.9	20.5	26.9	22.1	22.1	17.4	17.4	-0.1	24.1
92/93	10.8	4.9	12.3	7.8	6.4	1.9	-4.0	-1.0	3.4	7.8	10.8	10.8	13.7	-	5.7
93/94	-9.3	-7.9	-3.7	3.4	4.8	6.2	7.6	-9.3	-5.1	-3.7	2.0	4.8	9.1	0.6	0.0
94/95	-15.2	-27.9	-25.8	-22.6	-19.4	-17.3	-14.1	-12.0	-18.3	-	-6.7	-0.3	-2.4	-1.4	-14.4
95/96	-1.9	-6.5	-7.7	-10.0	5.1	6.3	7.5	0.5	0.5	-3.0	0.5	1.6	0.5	0.5	-0.5
96/97	12.0	6.9	0.6	-8.3	-4.5	-3.2	-5.8	-4.5	-4.5	-2.0	1.8	3.1	0.6	0.6	-0.5
97/98	3.9	-0.3	6.6	9.4	10.8	13.6	13.6	13.6	15.0	9.4	9.4	9.4	-0.3	-0.3	8.1
98/99	37.5	35.8	35.8	27.3	30.7	29.0	22.2	23.9	23.9	20.5	8.7	8.7	8.7	1.9	22.3
99/00	43.9	43.9	38.3	40.2	40.2	38.3	38.3	11.7	11.7	-5.3	-5.3	0.4	0.4	0.4	21.2
00/01	29.8	1.8	1.8	-5.3	-3.5	8.8	8.8	1.8	8.8	15.8	14.0	5.3	0.0	0.0	6.3
'01/02	49.4	54.0	65.7	70.4	65.7	28.4	37.7	26.0	7.4	9.7	5.0	2.7	0.4	0.4	30.2
Average	16.0	11.9	13.3	11.8	13.7	11.8	11.8	6.3	6.1	4.5	5.5	5.7	4.1	-1.0	8.7

The first ICAC forecast of Index A for crop year t (August-July) is made in May/June of year t-2, that is 27 months before the end of the forecast year. This forecast is revised every two months until the end of the forecast year. The forecasting error expressed as percentage of actual price normally declines as one gets closer to the end of the forecast year. Thus, the average error (last row) declines from 16% for the earliest forecast (27 months before the end of the forecast year) to 12% at sowing time, 6% at the beginning of the marketing season and less than 1% for the latest forecast.

## 21. Cotton Prices in \$ and CFAF 01/83-08/02; Deflated CFAF 01/94-06/02

Month	Index A UScents/kg	Exchange Rate CFAF/\$	Prices CFAF/kg	CPI	Price deflated By CPI2001=100
Jan-83	158.5	338.5	536.3		
Feb-83	163.9	344.1	563.9		
Mar-83	173.9	350.6	609.7		
Apr-83	176.9	365.8	647.0		
May-83	180.7	371.5	671.3		
Jun-83	189.8	383.2	727.3		
Jul-83	195.0	389.0	758.4		
Aug-83	200.2	402.0	804.8		
Sep-83	198.1	403.0	798.3		
Oct-83	194.3	397.5	772.2		
Nov-83	196.5	408.6	802.9		
Dec-83	197.0	419.1	825.6		
Jan-84	193.1	429.6	829.5		
Feb-84	192.8	416.2	802.2		
Mar-84	195.0	400.1	780.0		
Apr-84	196.2	405.7	795.9		
May-84	197.2	422.5	833.2		
Jun-84	184.6	421.0	776.9		
Jul-84	174.1	437.0	761.0		
Aug-84	166.5	443.1	737.7		
Sep-84	161.3	464.0	748.3		
Oct-84	162.3	470.9	764.4		
Nov-84	160.1	458.7	734.6		
Dec-84	158.7	474.8	753.5		
Jan-85	156.8	484.9	760.3		
Feb-85	151.4	503.5	762.4		
Mar-85	148.2	505.6	749.3		
Apr-85	145.8	470.6	686.1		
May-85	143.5	473.5	679.3		
Jun-85	138.6	467.0	647.0		
Jul-85	134.5	443.9	596.8		
Aug-85	125.6	426.2	535.3		
Sep-85	117.8	432.9	509.9		
Oct-85	107.7	403.4	434.3		
Nov-85	105.9	394.7	417.8		
Dec-85	106.4	384.9	409.4		
Jan-86	114.2	374.9	428.3		
Feb-86	120.2	358.1	430.4		
Mar-86	115.4	348.1	401.8		
Apr-86	106.9	359.8	384.7		
May-86	100.1	355.7	356.2		
Jun-86	90.5	356.5	322.5		

<b>Month</b>	<b>Index A UScents/kg</b>	<b>Exchange Rate CFAF/\$</b>	<b>Prices CFAF/kg</b>	<b>CPI</b>	<b>Price deflated By CPI2001=100</b>
Jul-86	82.5	346.3	285.9		
Aug-86	81.9	336.3	275.5		
Sep-86	95.9	334.0	320.3		
Oct-86	112.9	327.5	369.8		
Nov-86	116.4	331.2	385.7		
Dec-86	130.4	327.1	426.7		
Jan-87	144.8	309.7	448.4		
Feb-87	145.2	304.2	441.6		
Mar-87	139.1	305.2	424.5		
Apr-87	146.0	301.6	440.2		
May-87	168.9	298.5	504.0		
Jun-87	174.8	303.8	531.0		
Jul-87	183.5	307.6	564.4		
Aug-87	190.9	310.1	592.0		
Sep-87	184.3	302.6	557.8		
Oct-87	168.0	301.0	505.6		
Nov-87	167.2	285.3	477.0		
Dec-87	165.5	276.8	458.2		
Jan-88	159.2	278.8	443.7		
Feb-88	148.8	286.8	426.8		
Mar-88	146.3	284.7	416.4		
Apr-88	145.0	284.0	411.7		
May-88	144.6	286.7	414.5		
Jun-88	151.6	296.1	449.0		
Jul-88	139.8	310.8	434.5		
Aug-88	127.3	319.6	406.8		
Sep-88	125.1	317.5	397.2		
Oct-88	127.1	310.9	395.0		
Nov-88	129.2	298.5	385.7		
Dec-88	135.4	299.8	406.1		
Jan-89	139.2	312.5	434.9		
Feb-89	138.8	315.4	437.8		
Mar-89	145.6	316.2	460.3		
Apr-89	162.6	316.2	514.2		
May-89	170.5	330.8	564.1		
Jun-89	173.8	336.0	584.0		
Jul-89	183.0	321.2	587.8		
Aug-89	182.9	325.1	594.7		
Sep-89	179.6	329.6	592.0		
Oct-89	181.0	316.7	573.1		
Nov-89	181.1	311.0	563.1		
Dec-89	171.1	297.3	508.7		
Jan-90	165.5	288.0	476.7		
Feb-90	168.0	284.6	478.3		
Mar-90	173.9	287.7	500.5		
Apr-90	182.6	283.5	517.7		
May-90	188.7	279.9	528.1		
Jun-90	198.6	283.2	562.5		

<b>Month</b>	<b>Index A UScents/kg</b>	<b>Exchange Rate CFAF/\$</b>	<b>Prices CFAF/kg</b>	<b>CPI</b>	<b>Price deflated By CPI2001=100</b>
Jul-90	201.3	275.0	553.5		
Aug-90	179.2	263.7	472.5		
Sep-90	179.2	262.9	471.0		
Oct-90	179.4	255.3	457.8		
Nov-90	182.0	250.0	455.0		
Dec-90	184.6	253.3	467.7		
Jan-91	184.7	256.5	473.7		
Feb-91	187.1	252.0	471.5		
Mar-91	185.7	273.0	506.9		
Apr-91	182.6	288.0	525.9		
May-91	181.5	291.0	528.2		
Jun-91	178.5	302.9	540.7		
Jul-91	169.9	303.6	515.9		
Aug-91	162.0	296.5	480.3		
Sep-91	154.9	289.0	447.6		
Oct-91	149.8	288.2	431.6		
Nov-91	139.9	276.8	387.3		
Dec-91	136.3	267.8	365.1		
Jan-92	131.4	269.0	353.6		
Feb-92	124.1	275.6	342.0		
Mar-92	122.0	282.0	343.9		
Apr-92	128.4	278.7	357.8		
May-92	133.6	272.5	363.9		
Jun-92	140.9	264.9	373.2		
Jul-92	143.9	251.6	362.1		
Aug-92	131.7	246.2	324.4		
Sep-92	124.9	246.2	307.5		
Oct-92	117.4	251.5	295.3		
Nov-92	116.2	268.5	311.9		
Dec-92	119.5	269.7	322.3		
Jan-93	126.1	274.1	345.6		
Feb-93	133.2	278.2	370.7		
Mar-93	135.8	279.7	379.8		
Apr-93	134.6	269.9	363.2		
May-93	132.7	270.6	359.2		
Jun-93	129.9	278.3	361.5		
Jul-93	127.5	291.7	371.9		
Aug-93	122.4	296.4	362.7		
Sep-93	121.7	283.8	345.3		
Oct-93	120.8	287.5	347.3		
Nov-93	121.1	295.5	357.7		
Dec-93	130.6	292.4	381.9		
Jan-94	152.6	592.0	903.3	84.4	1522.9
Feb-94	177.8	590.1	1049.3	89.8	1662.6
Mar-94	180.4	576.5	1039.9	92.3	1603.5
Apr-94	185.1	581.4	1075.9	95.7	1600.0
May-94	189.8	568.1	1078.3	96.5	1591.2
Jun-94	188.5	556.8	1049.7	98.7	1513.7

<b>Month</b>	<b>Index A UScents/kg</b>	<b>Exchange Rate CFAF/\$</b>	<b>Prices CFAF/kg</b>	<b>CPI</b>	<b>Price deflated By CPI2001=100</b>
Jul-94	180.1	538.7	970.3	99.4	1389.0
Aug-94	169.0	536.7	907.3	100.0	1292.1
Sep-94	165.6	530.6	878.6	109.4	1143.2
Oct-94	163.3	520.6	850.1	111.6	1084.5
Nov-94	171.0	529.5	905.3	113.0	1140.8
Dec-94	192.2	541.4	1040.6	113.3	1307.5
Jan-95	210.8	529.4	1116.0	114.0	1393.2
Feb-95	222.5	522.9	1163.6	114.6	1445.8
Mar-95	243.6	498.3	1214.0	116.5	1483.4
Apr-95	250.8	484.6	1215.3	117.7	1469.9
May-95	253.4	499.1	1264.4	120.2	1497.0
Jun-95	200.0	491.6	983.1	120.1	1165.7
Jul-95	192.6	483.2	930.6	119.7	1106.5
Aug-95	187.5	497.1	932.3	121.3	1094.0
Sep-95	201.0	504.3	1013.8	121.3	1189.6
Oct-95	200.9	494.1	992.8	121.9	1159.3
Nov-95	196.6	488.7	960.8	121.2	1128.3
Dec-95	193.7	496.4	961.6	120.4	1136.5
Jan-96	190.0	500.6	951.2	121.9	1110.5
Feb-96	187.5	504.1	945.1	121.3	1108.7
Mar-96	183.5	505.9	928.1	121.7	1085.6
Apr-96	182.5	510.6	931.8	123.6	1073.4
May-96	182.9	519.1	949.4	125.2	1079.8
Jun-96	182.9	517.7	946.9	127.5	1056.9
Jul-96	175.8	509.3	895.4	127.5	999.4
Aug-96	168.3	506.0	851.6	128.6	942.3
Sep-96	166.1	512.8	851.9	128.0	947.3
Oct-96	166.2	516.7	858.5	126.5	966.1
Nov-96	167.7	511.6	858.0	126.2	968.0
Dec-96	174.7	524.2	915.8	126.5	1030.8
Jan-97	176.1	541.7	953.9	125.9	1078.3
Feb-97	177.3	565.5	1002.7	126.3	1130.2
Mar-97	177.7	572.0	1016.5	126.8	1140.9
Apr-97	173.9	576.3	1002.2	127.6	1118.1
May-97	174.9	574.3	1004.6	129.0	1108.8
Jun-97	177.7	582.9	1035.5	129.5	1137.9
Jul-97	179.4	604.4	1084.0	129.7	1189.3
Aug-97	179.0	620.5	1110.4	128.7	1228.4
Sep-97	175.6	601.5	1056.1	128.8	1167.5
Oct-97	171.6	589.3	1011.3	128.4	1120.8
Nov-97	170.3	580.8	988.9	129.2	1089.5
Dec-97	163.9	595.0	975.3	129.7	1070.5
Jan-98	159.0	608.4	967.5	129.7	1061.8
Feb-98	151.8	608.4	923.4	130.7	1005.9
Mar-98	150.9	612.2	923.6	132.4	992.8
Apr-98	144.8	608.3	881.1	134.4	933.0
May-98	141.9	595.2	844.5	137.0	877.7
Jun-98	152.0	601.1	913.6	138.5	939.3

<b>Month</b>	<b>Index A UScents/kg</b>	<b>Exchange Rate CFAF/\$</b>	<b>Prices CFAF/kg</b>	<b>CPI</b>	<b>Price deflated By CPI2001=100</b>
Jul-98	154.0	602.3	927.6	137.2	962.3
Aug-98	150.3	599.5	901.1	137.0	936.1
Sep-98	146.4	570.7	835.2	135.5	877.4
Oct-98	135.5	549.5	744.6	134.6	787.7
Nov-98	123.6	563.8	697.1	134.6	737.4
Dec-98	123.5	560.0	691.4	133.5	737.0
Jan-99	123.0	565.1	694.9	132.7	745.4
Feb-99	123.9	585.4	725.1	132.3	780.2
Mar-99	124.8	602.8	752.4	132.1	810.8
Apr-99	127.3	612.8	780.1	133.6	831.0
May-99	132.1	617.3	815.2	134.8	860.7
Jun-99	129.0	632.1	815.2	135.7	855.5
Jul-99	120.0	633.8	760.3	136.1	795.0
Aug-99	112.4	618.7	695.2	136.3	726.2
Sep-99	109.1	624.7	681.5	135.4	716.2
Oct-99	104.6	612.7	640.7	135.1	675.3
Nov-99	101.9	634.2	646.1	133.5	688.7
Dec-99	97.4	648.8	632.2	132.7	678.2
Jan-00	104.6	647.3	676.8	131.8	730.8
Feb-00	118.5	667.1	790.2	132.0	851.8
Mar-00	126.3	680.2	859.3	133.5	916.0
Apr-00	129.4	692.9	896.6	134.3	950.5
May-00	133.4	724.2	965.8	136.0	1011.2
Jun-00	131.1	691.1	906.2	138.2	933.5
Jul-00	128.7	698.2	898.8	137.9	927.8
Aug-00	134.2	725.6	974.1	137.8	1006.0
Sep-00	135.9	752.3	1022.5	137.1	1061.8
Oct-00	134.3	767.4	1030.2	138.0	1063.0
Nov-00	141.1	766.0	1080.5	138.2	1113.3
Dec-00	145.2	731.3	1061.9	138.8	1089.0
Jan-01	141.5	699.2	989.2	138.5	1017.1
Feb-01	133.2	711.8	948.5	138.3	976.4
Mar-01	120.3	721.5	867.9	140.4	880.0
Apr-01	112.8	735.6	829.3	141.1	836.9
May-01	110.2	750.6	826.4	142.9	823.0
Jun-01	104.7	768.9	804.3	144.1	794.5
Jul-01	100.5	762.3	765.9	144.8	752.7
Aug-01	95.6	728.6	696.7	144.5	686.4
Sep-01	91.0	720.1	655.2	143.0	652.1
Oct-01	82.0	724.2	594.2	144.0	587.4
Nov-01	83.8	738.5	619.0	143.2	615.2
Dec-01	94.5	735.1	694.8	143.4	689.6
Jan-02	95.7	742.8	711.0	143.1	707.6
Feb-02	94.4	754.0	711.7	144.3	702.2
Mar-02	92.7	749.0	694.7	144.8	682.9
Apr-02	91.3	740.5	676.2	145.9	660.0
May-02	86.7	715.4	620.1	147.3	599.3
Jun-02	90.9	686.8	624.1	148.3	599.2

<b>Month</b>	<b>Index A UScents/kg</b>	<b>Exchange Rate CFAF/\$</b>	<b>Prices CFAF/kg</b>	<b>CPI</b>	<b>Price deflated By CPI2001=100</b>
Jul-02	102.5	661.2	677.7		
Aug-02	109.0	670.9	731.2		

The CPI shown above is the simple average of the CPIs for Benin, Burkina, Côte d'Ivoire and Mali, using IFS sources. Nominal prices were deflated by the CPI index taking the 2001 average as unity; deflated prices are therefore expressed in 2001 CFAF. The lowest value of deflated prices occurred in October 2001 (CFAF 587 per kg) and the highest in May 1995 (CFAF 1497 per kg); this represents a 61% fall from peak to bottom, which can be compared with a 53% fall in current CFAF. .

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