

The Cotton Sector of Zimbabwe

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Abstract

This country study is a background paper prepared for the comparative analysis of organization and performance of cotton sectors in Sub-Saharan Africa, a study carried out by the World Bank, with the objective of analyzing the links between sector structure and observed performance outcomes and drawing lessons from reform experience, in order to provide useful guidance to policy-makers, other local stakeholders, and interested donor agencies. It describes and reviews the cotton sector situation in Zimbabwe, where a major change in the structure of the sector occurred around 2001-03. Zimbabwe thus provides a natural experiment in increasing the degree of competition in an already liberalized sector, that holds lessons for the structuring of cotton sectors across Africa in the future.

Following liberalization in 1994, the sector was run by an effective duopoly of Cottco, the privatized ex-parastatal, and Cargill. It made a smooth transition from a production system based on large-scale commercial farms to one almost entirely reliant on smallholder production. A seasonal loans scheme run by Cottco allowed smallholder producers to

achieve mean yields that were impressive by southern and eastern African standards, if modest by the standards of Francophone Africa. The sector also maintained its historic reputation for high quality lint during the transition. Since the onset of economic crisis in 2001, the number of firms participating in the cotton sector has increased rapidly. This is partly because there are so few alternative ways of generating foreign exchange in the economy and partly because of the pricing decisions made by Cottco and Cargill between 2001 and 2003. Since 2001 cotton companies have had to grapple with the challenges of operating in a highly dysfunctional and distorted economy. However, the biggest challenge to the future of the sector has come not from these day-to-day operational difficulties, but from the changing dynamics resulting from the rapid entry of new players into seed cotton buying and ginning. The paper investigates the impacts of increased competition on lint quality, credit provision and seed cotton pricing. The change in sector structure requires a corresponding change in sector regulation, but to date this has been at best partially addressed.

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COMPARATIVE ANALYSIS OF ORGANIZATION AND PERFORMANCE OF AFRICAN COTTON SECTORS



The Cotton Sector of Zimbabwe

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Abbreviations

AFC	Agricultural Finance Corporation
AMA	Agricultural Marketing Authority
CCGA	Commercial Cotton Growers Association
CFU	Commercial Farmers' Union
CMB	Cotton Marketing Board
CRI	Cotton Research Institute
D&PL	Delta and Pineland
GMB	Grain Marketing Board
ICFU	Indigenous Commercial Farmers' Union
NACGMB	National Association of Cotton Ginners, Merchants and Buyers
NCC	National Cotton Council
NFU	National Farmers' Union
RBZ	Reserve Bank of Zimbabwe
ZFC	Zimbabwe Fertilizer Company
ZFU	Zimbabwe Farmers' Union

Executive Summary

Zimbabwe and Tanzania compete to be the largest cotton sector in southern and eastern Africa. After liberalization in 1994, Zimbabwe's cotton sector was dominated by two firms, Cottco and Cargill who set the strategic direction for the sector.

With the onset of economic crisis in 2001, the number of firms participating in the cotton sector increased rapidly. The increase in the number of ginners, some of them either quite opportunistic or used to operating in less quality-conscious sectors than Zimbabwe's, undermined the informal coordination which had sufficed for Cottco and Cargill's development of the sector during the 1990s. Credit provision and quality control are the two areas that have been most affected. There is a real danger that Zimbabwe will lose its hard-earned reputation in international markets for high quality cotton lint.

Zimbabwe provides a natural experiment in increasing the degree of competition in an already liberalized cotton sector. It thus holds lessons for the structuring of cotton sectors across Africa in the future.

The main impact of macro-economic instability on the cotton sector has been through changes in the real exchange rate. Zimbabwe's case dramatically highlights the importance of the real exchange rate on the profitability and performance of a commodity sector such as cotton. The initial fall in the real exchange rate created conditions whereby companies could increase profits (albeit under considerable uncertainty), as the benefits of the exchange rate change were not passed onto producers. Prior to this, producers had received a very high share of world lint prices. The high profits that companies reaped during 2001-2003 sent a signal that encouraged many other companies to enter the sector. Continued falls in the real exchange rate mean that Zimbabwe's sector remains cost competitive in US dollar terms, despite inevitably higher costs arising from the demands of operating in a highly distorted and unstable macro-economic environment. In addition, some of the current distortions within the Zimbabwe economy, such as artificially low electricity prices and loans from commercial banks at negative real interest rates, also help keep costs down. Thus, the number of companies continues to increase.

In turn increased competition for seed cotton has had a major negative impact on seed cotton and lint quality (section 4.6). In section 6.2 we provide some explanation for this: the profits that companies can obtain from pursuing a "high input, high quality" strategy amongst their smallholder growers are not as high as those that can be obtained from free-riding on input provision by others, even if the free-riding firm then receives a lower price from its lint sales. In the absence of strong incentives for new firms to maintain quality, competition for seed cotton has led to quality control measures being de-emphasised. An initial impact of increased competition was to increase the number of company-run input credit schemes and hence credit access for producers. However, increased competition has also intensified side-selling of seed cotton, which makes it more costly for companies to offer credit. Increased competition has raised seed cotton prices – a fact that is appreciated by producers - but the impact on average seed cotton prices has not been as strong as might be expected. We attribute this to the fact that the two main firms still control around 80 percent of the market (Figure 5). New firms would have to be larger and financially stronger than they are now to raise the average seed cotton price received by producers season by season.

1. Introduction

Zimbabwe is among southern and eastern Africa's largest cotton producers (competing with Tanzania) and was, until recently, the regional standard bearer for quality (Baffes 2001). During the 1990s the sector made a smooth transition from a production system based on large-scale commercial farms to one almost entirely reliant on smallholder production. A seasonal loans scheme run by Cottco, the ex-parastatal and largest player in the sector, was at the heart of this transition, allowing smallholder producers to achieve yields that were impressive by southern and eastern African standards, if modest by the standards of Francophone Africa. The sector maintained its historic reputation for high quality lint during the transition.

Following liberalization in 1994, the sector was run by an effective duopoly of Cottco and Cargill. While the state retained an ownership stake in Cottco until 2001 and the Ministry of Agriculture participated in the National Cotton Council, the informal regulatory forum for the sector, the strategic direction for the sector was effectively set by the two dominant firms. With the onset of economic crisis in 2001, the number of firms participating in the cotton sector increased rapidly. This was partly because there were so few alternative ways of generating foreign exchange in the economy and partly because of the (arguably short-sighted) pricing decisions of Cottco and Cargill between 2001 and 2003. Since 2001 cotton companies have had to grapple with the challenges of operating in a highly dysfunctional and distorted economy, characterised by shortages of foreign exchange and many basic items (e.g. fuel – even cash to pay farmers) and by enormous uncertainties surrounding all aspects of business operation. However, the biggest challenge to the future of the sector has come not from these day-to-day operational difficulties, but from the changing dynamics resulting from the rapid entry of new players into seed cotton buying and ginning.

The increase in the number of ginners, some of them either quite opportunistic or used to operating in less quality-conscious sectors than Zimbabwe's, undermined the informal coordination that guided the sector during the 1990s. Credit provision and quality control are the two areas that have been most adversely affected by this new entry. Concerned with side-selling of seed cotton, Cottco dramatically scaled back their provision of seasonal credit to smallholder producers in the 2004/05 production season. This contributed significantly to the 40 percent fall in Zimbabwe's total 2004/05 production¹. Cottco has since expanded its credit provision again, but side-selling remains a major issue. With regards to quality, the proportion of lint from established companies that achieves top grades has fallen dramatically, while the initial quality of lint produced by some of the newer companies has been very poor. There is a real danger that Zimbabwe will lose its hard-earned reputation in international markets for high quality cotton lint.

By 2004 it was clear to many observers, as well as existing players, that a new regulatory framework was required to guide the expanded sector. Concerned members of the National Cotton Council prepared a draft set of new regulations for presentation to the Minister of Agriculture, but neither these nor any amended version have yet been

¹ 2004/05 was also a poor season weather-wise, whereas the 2003/04 harvest had been one of the highest on record.

given legal backing. Instead, for the 2006/07 production season, companies are being required to provide pre-harvest support to producers and to sell 30 percent of their lint to domestic spinners as conditions for receiving an export permit². The recently formed National Association of Cotton Ginners Merchants and Buyers has prepared guidelines, based on the 2004 draft regulations, to which it expects cotton companies to adhere if it is to recommend that they be given an export permit in the future. The possible impact of this emerging regulatory system for 2006/07 is discussed later in this report.

Meanwhile, seed cotton production has stagnated after strong expansion during the 1990s. Recurring droughts – a perennial problem for the Zimbabwe sector – have not helped here and nor has a national shortage of fertilizers. However, the sector's internal organizational problems, perhaps best illustrated by the contraction in Cottco's credit scheme in 2004/05, are also partly to blame. The additional entrants into the sector have undoubtedly injected more competition into seed cotton price setting, but input costs have also been rising and credit has become increasingly important for input access. As part of the plan to improve input access in 2006/07, competition in seed cotton pricing may be curtailed.

In summary, Zimbabwe since 2001 provides a natural experiment in increasing the degree of competition in an already liberalised cotton sector. Zimbabwe's example can thus inform future sectoral restructuring across Africa. There are clearly challenges from extra competition as well as possible benefits. Can the benefits from increased competition be captured without undermining the very foundations of the sector's previous success? If so, how?

2. Historical Background and Reform Process

2.1. The Zimbabwe Cotton Sector Prior to Liberalization

The state played an active role in the early development of the cotton sector, ensuring that cotton was a profitable crop for white commercial farmers. Unlike in Tanzania, there was an unbroken history of central state control over both support services to cotton farmers (including a strong cotton research program and effective extension) and the ginning and marketing functions. In turn, the effective performance of these functions by the state was ensured by the strong commercial farmers' lobby in the country.

Indigenous cotton was grown in some areas of what was then Southern Rhodesia at the end of the nineteenth century. During the early 1900s, the first research trials were conducted by the British South Africa Company using seed from Egypt, Brazil, the United States, and Peru. Commercial production of cotton began in 1923 and a cotton research station was set up in Kadoma in 1925. Early research (up to 1950) focused on effective pest control methods. This included varietal selection for resistance to jassids and bollworms and the development of appropriate cultural practices. The early 1950s saw the introduction of Albar breeding stock from Uganda, starting with Albar 49 in 1952. Albar 637, introduced in 1959-60, was particularly high yielding. Combined with

² This latter condition is not new, but there are signs that it will be enforced with new vigour in 2006/07.

breakthroughs in chemical control of red bollworm achieved during the 1950s, this paved the way for a rapid expansion of production in the 1960s (Mariga 1994).

In the 1970s, the breeding program was divided into four, focusing respectively on middle, highveld and lowveld³ (irrigation) medium staple, and long staple cotton. Continuous emphasis on the careful use of pesticides in combination with appropriate cultural practices kept the average number of sprays in Zimbabwe below those recorded in other countries with comparable yields (Mariga 1994).

A Cotton Research and Industry Board, established in 1936, was responsible for both research and marketing. The first ginneries were built in 1943, while spinning mills were set up in 1951. Later, the responsibility for marketing was given to the Cotton Marketing Board (CMB), a parastatal that operated as a monopoly (Hanyani-Mlambo et al. 2002). In 1967 the Agricultural Marketing Authority (AMA) was set up to coordinate the CMB and other major parastatals. AMA's governing board had 50 percent representation from the Rhodesian National Farmers' Union. In 1976, AMA began to announce minimum guaranteed cotton prices prior to planting (Rukuni 1994). Attractive prices remained a feature of the sector until the late 1980s, when a requirement to provide subsidized lint to the domestic textile industry became increasingly burdensome to CMB.

At Independence, the broad thrust of agricultural policy was to extend service support from commercial farming areas into communal areas, where most smallholders live. In the 1980s cotton research focused on moisture conservation, simpler pest scouting methods and breeding for good performance under low management regimes. At the same time, there was an expansion in the number of CMB depots in communal areas from five in 1980 to sixteen by 1985. Together with attractive prices in the early 1980s, this encouraged the initial smallholder production growth seen in Figure 1⁴. During the 1980s the Agricultural Finance Corporation (AFC) was also actively lending to better-off farmers in communal areas. This support collapsed around the end of the decade under a burden of bad debts. Nevertheless smallholder cotton farmers soon found alternative support through the CMB credit scheme, established in 1992 with financial assistance from the World Bank.

CMB remained a generally effective and well-run organization through the 1980s. From 1983 onwards, however, it was directed to provide lint to the domestic spinning industry at prices below export parity. At the end of the 1980s, the price of lint paid by domestic spinners was less than 60 percent of the average price received for exports. Less than half of national cotton production was exported, compared with 80 percent in 1980. This restricted the prices that CMB could afford to pay to producers and the producer price of cotton fell (in much the same way as the maize price did) from 1985 till 1990 (Jansen and Rukovo 1992). As a result, the number of commercial farmers growing cotton began to decline. Commercial production of seed cotton peaked around 200,000 tons in 1987/88 and had fallen to one third of this level by the early 1990s

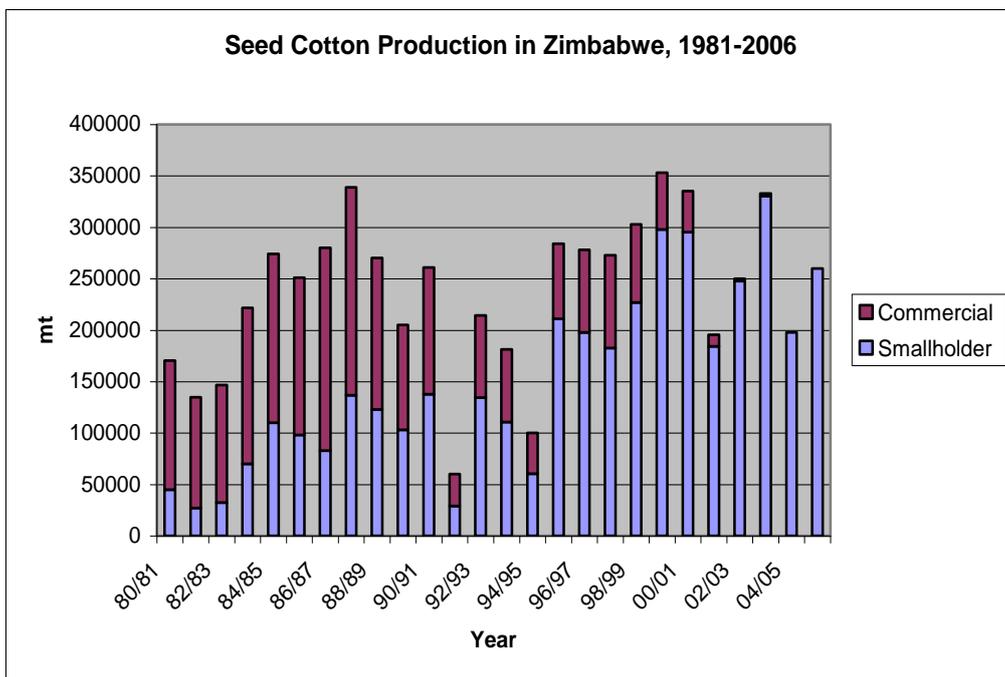
³ The Highveld is the central spine of the country, running southwest to northeast, with an elevation of 1200m and above and occupying about 25 percent of the country's land area. Either side of this, the middleveld has an elevation of 900-1200m and occupies around 40 percent of the country's land area. The lowveld is found in the south and north of the country (elevation below 900m). The main cotton growing area within the lowveld is around Triangle in the south.

⁴ According to Takavarasha 1994, the number of registered cotton growers increased from less than 90,000 in 1980 to 215,000 in 1987.

(Figure 1). By contrast, cotton production by smallholders, who did not have access to the higher value alternatives that were open to commercial producers, continued to rise. By the end of the 1980s, over 50 percent of national production was accounted for by smallholders. Despite this rise, it took more than a decade for national production to surpass its 1987/88 peak.

As part of a wider program of economic reforms, CMB was granted formal managerial autonomy in 1991. It abolished the subsidy on lint sales to domestic spinners, increased the proportion of lint that went to export markets, raised producer prices and made profits during 1990 and 1991. However, domestic spinners again lobbied the government for preferential treatment. Subsidised sales were revived in 1992 and CMB again made losses (Jansen and Rukovo 1992; Larsen 2002).

Figure 1: Seed Cotton Production in Zimbabwe



Sources: CSO, Crop Forecasting Committee, Cottco

Notes: “smallholder” unhelpfully combines communal, resettlement and small-scale commercial farmers (however, the main component is communal farmers); large-scale comprises production by large-scale commercial farmers and on estates owned by the parastatal ARDA.

In Zimbabwe cotton is planted in November-December and the majority of the harvest is marketed during May-June.

2.2.Liberalization

Liberalization began in 1994. In this year, CMB’s statutory monopoly in purchasing, ginning, marketing and export of cotton was removed and a new company, the Cotton Company of Zimbabwe Ltd (hereafter Cottco) was launched to take over its commercial functions. The former parastatal was first commercialized, with the government assuming most of the debt carried over from CMB in 1995, and then privatized in October 1997. (It was listed on the Zimbabwe Stock Exchange on December 1st 1997). However, the government retained a 25 percent share holding until 2001. Prior to 2001, therefore, the government remained the biggest single shareholder (The Cotton Company of Zimbabwe Ltd 2001).

In the first two seasons following liberalization, two new ginning and marketing companies entered the market: the US transnational Cargill and Cotpro. Cotpro was formed by a consortium of large-scale commercial cotton producers and the investment arm of the Commercial Cotton Growers Association (CCGA). Its formation was born out of frustration with the policy of subsidizing the domestic textile industry immediately prior to liberalization. Initially it ginned seed cotton at the CCGA-owned ginnery in Triangle⁵ on a contract basis, but built its own ginnery at Chinhoyi, in a joint venture with Copaco and CFDT of France, in 1998/99 (Larsen 2002). Cottco bought a controlling stake in Cotpro in 2000.

Cargill purchased two ex-CMB ginneries from Cottco in February 1996 (Larsen 2002). Cargill has remained the main competitor to Cottco throughout the past decade, with a market share generally around 20-25 percent.

The orderly privatization of CMB to form Cottco, combined with the limited competition in the buying and ginning arenas in the 1990s, meant that the tradition of strong, “centralized” service provision to cotton farmers survived into the liberalization era. This, however, has been challenged since 2001/02 and much of the rest of the paper will focus on the institutional dynamics of the newly competitive sector.

3. Overview of the Cotton Sector

3.1. Key Macro-Economic Factors Affecting the Sector

Since 2001 cotton companies have had to grapple with the challenges of operating in a highly dysfunctional and distorted economy, characterised by rampant inflation (over 1000 percent p.a. in 2006), shortages of basic items and enormous uncertainties surrounding all aspects of business operation. Fuel supplies have been uneven for several years, so cotton companies have to import fuel on behalf of transporters with whom they work and at times even on behalf of local fertilizer blending companies⁶. During the 2003 buying season, cash itself was scarce throughout Zimbabwe. Cargill is believed to have increased its market share considerably during this year, as they were the first company to issue their own temporary “bearer cheques”, which became accepted within local rural economies in lieu of cash (Hanyani-Mlambo and Poulton 2004).

The entrance of new companies into the cotton sector for the purpose of securing scarce foreign exchange for their other, core operations indicates that cotton companies are in a better position than companies in other sectors of the economy to cope with the prevailing macroeconomic difficulties. Nevertheless, uncertainties over the exchange rate and exchange rate policy loom large for cotton companies. Figure 2 shows that the variation in the real exchange rate since 2000 has been almost as great as the variation in the A index lint price throughout the entire post-liberalization period, even though the A index price itself is considered highly volatile.

We discuss pricing in more detail in section 4.7. However, we note in passing here that the huge depreciation in the real exchange rate during 2001 and 2002 (when foreign

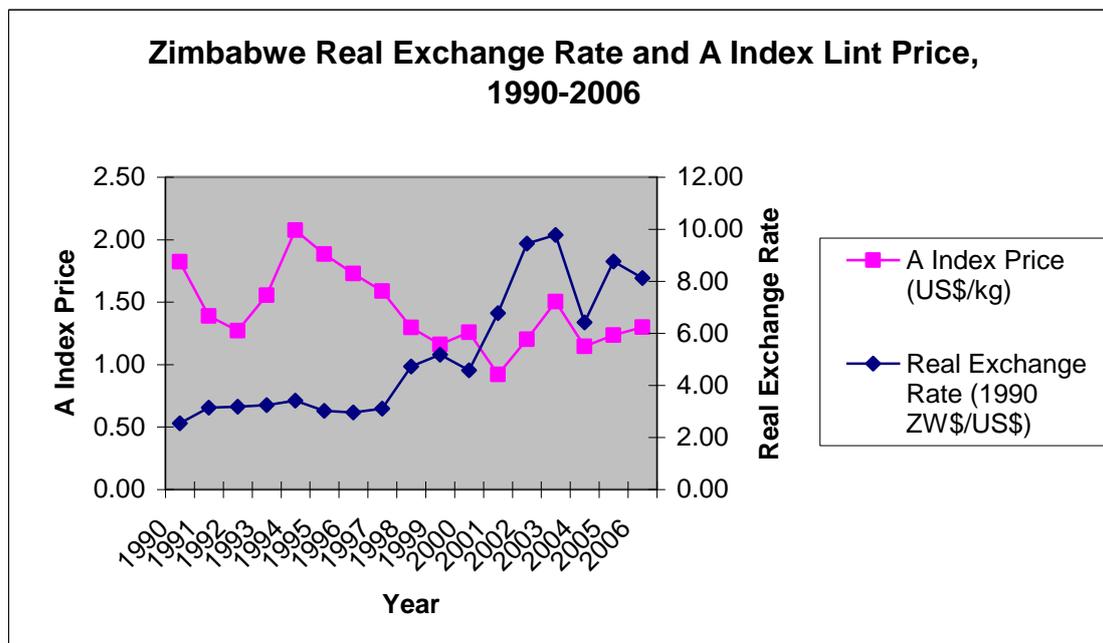
⁵ Prior to liberalization, this ginnery ginned as an agent for CMB (Larsen 2002).

⁶ Cottco are believed to have received priority in allocation of scarce fertilizer in 2006/07 because they provided the blenders with fuel to undertake their blending operations.

exchange scarcity had begun to be felt, but hyper-inflation was only just beginning to take off) greatly increased the ability of cotton companies to pay attractive seed cotton prices. In fact, seed cotton prices were modest in real terms during these years. As a result, Cottco posted record profits and the rate of new entry into the sector increased exponentially.

Inflation accelerated during 2003, such that by January 2004 the year-on-year increase in the consumer price index had reached 623 percent. A concerted effort was made to control inflation during 2004, such that this figure had fallen to 133% in December 2004. However, the introduction of an official auction for foreign exchange in January 2004 also slowed the fall in the Zimbabwe dollar, with the result that there was actually an appreciation in the real exchange rate during 2004 (Figure 2). Since mid-2005 inflation has been rising again and has been above 1000 percent p.a. since April 2006. However, perhaps partly due to the abandonment of the auction system, the gap between the official and parallel foreign exchange rates has also widened dramatically and the net effect has been another depreciation in the real exchange rate.

Figure 2: Zimbabwe Real Exchange Rate and A Index Lint Price, 1990-2006



Source: authors' calculations based on data from ICAC, RBZ, US Bureau of Labour Statistics and private records

Notes:

1) Here and elsewhere in this report, an effective exchange rate is calculated for all years after 2001. This is a weighted average of official and parallel rates, the weighting changing over time according to changes in the foreign exchange retention rules.

2) For years prior to 2001, the exchange rate used is an annual average figure (average exchange rate prevailing during the year, deflated by annual change in CPI). From 2001, when precision in dates becomes more important due to spiralling inflation, we use the (average) exchange rate prevailing during the month of July, deflated by the change in CPI during the 12 months to July. July is chosen because it is when much of Zimbabwe's seed cotton is purchased, thereby facilitating later analysis of seed cotton prices.

3) The quoted A Index price is the annual average for the year beginning August 1st, i.e. the average price at which companies may expect to sell the resulting lint.

As well as movements in the real exchange rate, rules governing foreign exchange retention by exporting companies are an additional source of uncertainty. For many years, exporting companies have been required to remit a proportion of all foreign exchange receipts to the Reserve Bank of Zimbabwe (RBZ), where they are exchanged into Zimbabwe dollars (ZW\$) at the official exchange rate (Ndlela and Robinson 2007). The remainder they are allowed to keep in foreign currency accounts, which is generally taken to mean that this money can command at or close to the parallel market rate. As the ratio of the parallel exchange rate to the official exchange rate has varied from 1.0 to 31.8 since January 2001 (average = 5.2)⁷, the proportion of their revenue that companies are allowed to keep in foreign exchange is an important determinant of their profitability. There have been several changes in the rules governing retention since 2001. In addition, since 2005 it has been made somewhat more difficult for companies to access and freely use the proportion (currently 70 percent) that is kept in foreign currency accounts. During the 2005 seed cotton marketing season, RBZ made a supplementary payment to cotton producers on top of the price paid by the cotton companies, in tacit recognition of the fact that cotton companies were unable to freely access their foreign currency earnings at a reasonable rate and hence were unable to make a satisfactory payment to producers.

Just as some cotton companies have been able to turn agile responses to shortages within the Zimbabwean economy to their short-run competitive advantage, so others have been able to obtain competitive advantage from both successful speculation on foreign exchange rate movements and unequal access to foreign exchange. An example of the former is that some companies paid high prices for seed cotton in July 2006, speculating that a large real devaluation of the currency would occur following the six-monthly monetary policy statement by the Governor of RBZ in August 2006. This indeed happened (even though the currency was revalued, with three zeros being taken off) and they were able to recover their high seed cotton prices through lint sales that benefited from the devaluation.

The fact that some companies are able to obtain competitive advantage in the market for seed cotton through unequal access to foreign exchange is a serious point of contention for the established companies. Some of the newer entrants into the sector registered their operations under export processing zone rules, which until July 2006 entitled them to retain as foreign currency all the foreign exchange that they generate⁸. In simulations in section 6.1 we attempt to show the impact of this preferential treatment on a company's ability to pay for seed cotton. From a cotton industry regulatory perspective, such preferential treatment is hard to justify. It means that competition within the industry is conducted only partially on the basis of proficiency in cotton production and marketing. Thus, poor technical management may not be penalized as it should be by market forces or, conversely, high proficiency in cotton production and marketing is not fully rewarded.

Finally, we note from Figure 2 that, while the largest movements in the real exchange rate have taken place since 2001, they have not been restricted to this period. In particular, there was a large devaluation of the real exchange rate in 1998, which usefully increased the seed cotton price that companies could pay farmers. High seed

⁷ In February 2007 the ratio was around 20:1.

⁸ However, EPZ rules also require that 80 percent of a company's production is exported. This clashes with the requirement that the cotton sector has tried to impose since 2006 that 30% of lint produced is sold to domestic textile firms (at subsidized prices).

cotton prices in the final years of the 1990s undoubtedly contributed to the large increase in production observed during this period.

3.2. Seed Cotton Production

According to ICAC data, Zimbabwe ranked as the 5th largest lint producer in Africa in 2004 and the 12th largest in 2005.

Figure 1 showed trends in seed cotton production in the country since Independence in 1980. Although total production has fluctuated quite considerably, as a result both of droughts (1981/82, 1982/83, 1991/92, 1994/95, 2001/02, 2004/05) and of policy, a striking trend throughout the period has been the rising share of national output accounted for by smallholder producers. In the first few seasons after Independence, smallholders accounted for 20-25 percent of seed cotton production. By 1990, this share was around 50 percent. By 1999/2000 (i.e. prior to the economic and political crisis), it was 85 percent and still rising, as smallholders continued to take up the crop, but large-scale commercial farmers exited cotton for more profitable alternatives (such as export horticulture). Since 2002/03 large-scale cotton production in Zimbabwe has been negligible, accounting for less than 1 percent of national output.

Most of the major smallholder cotton growing regions of Zimbabwe are found either to the west of Harare (Gokwe, Sanyati) or to the north (Guruve, Muzarabani, Mt. Darwin). An exception is Checheche, which is in the south-east lowveld. Historically, the large-scale commercial sector (Chinhoyi, Rafingora and Mazowe) was also located in the north of Zimbabwe, albeit closer to Harare than the smallholder areas. This pattern reflected the pattern of white settlers taking the best land closest to the capital and communal farmers being dispersed to the peripheries of the country. Some large-scale cotton was also grown under irrigated conditions in the Triangle area close to the Limpopo border with South Africa.

Growth in smallholder production during the 1990s was driven by the development of the Cottco credit scheme and by active promotion of the crop in smallholder areas, most notably Gokwe, an area that experienced a wave of new settlement following public efforts to control the tsetse fly.

In 2001/02 there were an estimated 250,000 to 300,000 smallholder cotton growers in Zimbabwe (Hanyani-Mlambo et al. 2002). The population of Zimbabwe at this time was around 12.5 million⁹, of whom 65 percent lived in rural areas. With an average of 5.5 people per household in communal areas, this means that up to 20 percent of rural households may have been involved in growing cotton.

Moyo 1995 and Deininger et al. 2000 argue that even though the first cohorts of resettlement farmers (who received their land in the 1980s) took longer than expected to become established as strong, independent cultivators, they did in due course become significant growers of cotton (as well as maize). Indeed, Moyo 1995 argued that, although they only constituted 5 percent of “peasant” households, they were responsible for 15-20 percent of national cotton production. With above-average land holdings and labor forces plus gradually accumulated livestock holdings, they were

⁹ The combined effects of economic crisis, out-migration and HIV/AIDS mean that it may have fallen slightly since then.

able both to exceed their own maize requirements and dedicate considerable land to cotton.

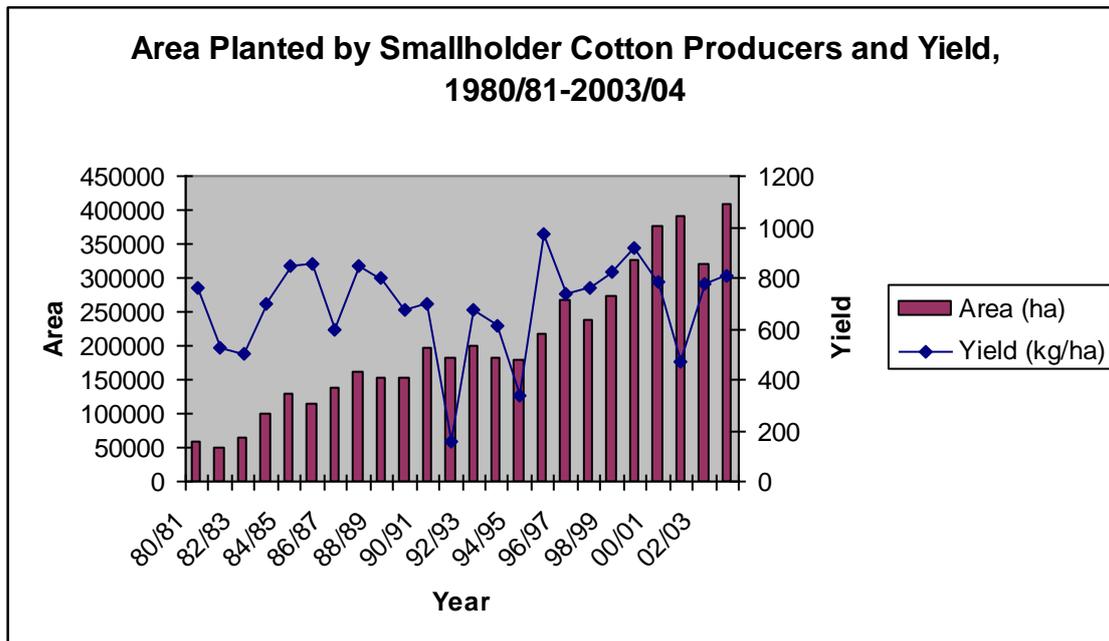
Despite stagnant recent production, cotton companies are optimistic that, if service delivery issues can be sorted out, farmers who have received land through the post-2001 resettlement program have the potential to boost national cotton production in the future. Many of the farmers on so-called A1 resettlement plots were cotton farmers in the communal areas before receiving their new land allocation. The five hectares of good arable land that they have received through the resettlement program is a useful improvement over their previous holding and should allow them to plant more cotton than they did before¹⁰.

So-called A2 farmers have received much larger plots, but often lack the capital and equipment to fully exploit their new holdings. However, when Cargill tried targeting A2 farmers with offers of input credit in 2005/06, the results were disappointing – the main constraint discouraging these farmers from growing cotton apparently being difficulties in obtaining sufficient labour (John Battershell, *pers.comm.*)¹¹.

3.3. Areas Cultivated and Yields

Figure 3 shows estimates of area planted by smallholder producers along with the average seed cotton yield that they have achieved.

Figure 3: Area Planted by Smallholder Cotton Producers and Yield



Sources: CSO, Crop Forecasting Committee, Cottco

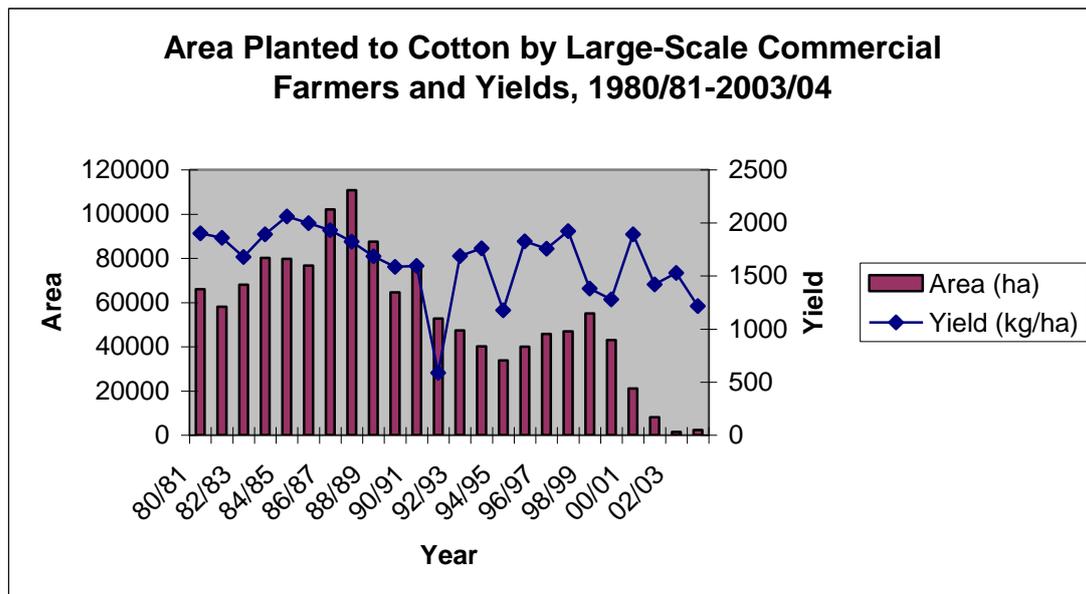
¹⁰ By contrast, production in other, higher value sectors, such as horticulture and tobacco, may never recover fully from the effects of the recent land policies.

¹¹ Taking a wider view beyond the cotton sector, the fact that this initiative was even considered highlights the fact that previously strong farm businesses (that in many cases had switched out of cotton into higher value enterprises in the 1990s) have been replaced by weaker businesses that currently lack the capital, expertise or market contacts to continue these higher value enterprises and can only access the finance and inputs to grow cotton through a dependent, contract farming relationship.

Some commentators question whether yields have begun to decline in recent years, either as soils become exhausted or production expands into more marginal areas. However, there is little support for this as a general proposition from the data in Figure 3. Farmers whom the authors talked to during focus group discussions in Muzarabani and Gokwe South in February 2007 noted short-term problems in obtaining fertilizer, but provided mixed responses to questions about longer-term trends in cotton yields.

In contrast to smallholder producers, large-scale commercial producers achieved average yields of around 1700 kg/ha during the period 1980/81-2000/01 (Figure 4). Figure 4 also confirms that the main decline in cotton production effort by large-scale commercial producers occurred in the late 1980s and early 1990s. From 1991/92 to 2000/01 area planted remained in the range 40-50,000 ha. However, there was a further sharp decline with the onset of the fast-track land redistribution program in 2001. In 2001/02 an estimated 55 large-scale commercial producers grew cotton. By 2002/03 this was down to 14 (Hanyani-Mlambo et al. 2003; Hanyani-Mlambo and Poulton 2004).

Figure 4: Area Planted to Cotton by Large-Scale Commercial Farmers and Yields



Sources: CSO, Crop Forecasting Committee, Cottco

Indicative information on the distribution of areas planted and yields obtained by smallholder producers is available both from the 2002 and 2004 farmer surveys conducted by the DFID-funded “Competition and Coordination” project in Gokwe South and Muzarabani Districts¹² and from focus group discussions in the same districts undertaken by the authors in February 2007¹³. However, the information obtained from these two sources is not fully compatible.

¹² A total of 300 households were surveyed in 2002, 150 in each district, of which 265 (88%) were cotton producers. In 2004 only 227 of these households could be traced, due amongst other things to land resettlement, so 73 new households were added to the sample. In 2004, 275 households (92%) cultivated cotton.

¹³ Four focus group discussions, two in each district, were undertaken, with 5-7 participants in each group.

As an initial exercise within the focus group discussions, the participants grouped households in their village into three or four groups, according to the extent of their cotton production¹⁴. Table 1 presents average findings on area and yield by group and compares these with data from the 2004 farmer survey. From this comparison, it can be seen that the area figures generated by the focus group discussions are around 60 percent larger than those generated by the farmer surveys for groups 1 and 2, but similar for group 3. According to both sources, considerable inequality exists across groups in area planted, which (according to the focus group discussions) is not compensated for by areas planted to other crops. This is consistent with the findings of Jayne et al. 2003 on inequality in land holdings amongst smallholder farmers in southern and eastern Africa more generally.

Table 1: Disaggregating Area Planted and Yield Amongst Smallholder Cotton Producers

Group	Proportion of Households	Area Planted to Cotton (ha)	Proportion of Cultivated Land Devoted to Cotton	Yield (kg/ha)	Data from 2004 Household Survey	
					Average Area by Area Group (ha)	Average Yield by Yield Group (kg/ha)
1	19%	6.9	64%	1623	4.3	1602
2	40%	3.1	54%	1050	1.8	949
3	40%	0.9	42%	640	0.8	445

Notes:

- 1) Respondents in the 2004 Household survey were asked to provide basic production statistics for the past three years. The figures used in this table are based on average figures for each household over these three years.
- 2) In three of the PRA exercises, it was explained that Group 1 households were unable to obtain sufficient inorganic fertilizer for the entire area that they had planted to cotton in 2006. The quoted yield figures for Group 1 are for fully fertilized acreages.
- 3) To generate the figures in the right-hand columns, data from the 2004 household survey were sorted by area and by yield in turn. Groups were then determined based on the proportions given by the focus group discussions (20%, 40%, 40%).

The yield figures generated by both data sources give a higher overall figure than the national average data reported in Figure 3, especially when the drought year 2001/02 is taken into consideration. Needless to say, there are wide margins of error associated with all sources.

According to both the focus group discussions and the 2004 farmer survey, there is considerable variation in yields achieved by different groups. This is a credible finding. However, the main inconsistency between the two sources occurs at this point. According to the focus group discussions, the larger farmers (group 1) are the ones who have the resources necessary to achieve the highest yields and are also the ones best supported by the cotton companies (Cottco especially) to do this. By contrast, the 2004 farmer survey indicates a negative, but not significant, correlation between area planted

¹⁴ This exercise was inspired by the more conventional PRA wealth ranking exercise. Villages in these districts are small, so all households in a village were included in the exercise, identified by the name of the household head. The number of households per village ranged from 19-52 (average 40). In all villages, households were initially divided into three groups. However, in two of the four villages, the group with the lowest cotton production was subsequently subdivided into two. For presentation purposes here, these two sub-groups have been re-aggregated. Once groups were identified, a series of questions was asked about typical household characteristics and livelihood profiles of households within each group, as well as about their cotton production activities. Finally, a cotton production budget was constructed for each group.

to cotton and yield achieved. Hence, the figures in the two right-hand columns of Table 1 are for different groupings of producers.

According to the focus groups, higher yields are a function of greater resources. All focus groups reported that group 1 farmers have their own ploughing teams and equipment, so can plough as soon as the rains arrive. They either have large families or sufficient resources to hire labour for timely execution of critical cultural practices (e.g. weeding). Because of their high production levels, they are considered creditworthy by the cotton companies and especially Cottco, so gain access to adequate fertilizer for at least part of their cultivated area¹⁵. Group 2 farmers may or may not have their own ploughing teams and equipment and cannot call on as much labour (either family or hired) as group 1, which in large part explains the smaller acreage that they plant each year. Perhaps more importantly from a yield perspective, only a minority of them receive any fertilizer from cotton companies. In two of the villages, it was reported that group 2 households who received fertilizer from Cottco were able to apply it at the same rate as group 1 households, albeit on a smaller area¹⁶. In another village it was reported that those group 2 households who received fertilizer only got sufficient for spot application on patches of lower fertility land, while in the fourth village it was reported that none of the group 2 households had received any fertilizer in 2006/07. Finally, group 3 and 4 households are either young couples, perhaps just starting their families, or households with old heads. Neither can call on much labour and the former have few assets (e.g. they have had little chance to accumulate livestock). During 2006/07, when all companies are supposed to be providing pre-harvest services to producers, they have received minimal support (seed and perhaps one bottle of pesticide at the time of the focus group discussions). A few have been considered insufficiently creditworthy even for this and have had to buy seed and acquire chemicals from group 1 farmers in exchange for a service (e.g. spraying for the group 1 household). They snatch a couple of hours for weeding late in the day, having provided hired labour to group 1 and 2 households first.

3.4. Seed Cotton Purchase and Ginning

As already noted, for the first few years after liberalization the Zimbabwe cotton sector was effectively a duopoly. Cottco and Cargill had common views on maintaining the country's reputation for high quality lint and there was an understanding that Cargill would not buy seed cotton from farmers served by Cottco's input credit scheme. Cottco was the leader in seed cotton pricing, with prices set so as to provide producers with an attractive enough return to encourage them to invest in cotton production.

According to Larsen 2002, in addition to Cottco, Cargill and Cotpro, a few other smaller buying companies were established. These smaller companies (not named by Larsen) never gained more than 5 percent of the market between them and mainly operated as mobile buyers, ginning seed cotton at the CCGA-owned ginnery in Triangle on a contract basis.

¹⁵ Reports of how much fertilizer group 1 farmers used varied by village, from one bag per acre basal plus one bag per hectare top dressing to four bags per hectare basal plus two bags per hectare top dressing. In the latter case, respondents explained that local farmers preferred to use the full package of fertilizer on a proportion of their land and rely on manure alone on the rest, rather than spreading available fertilizer more thinly across their whole planted area.

¹⁶ It was argued that these group 2 households achieved similar yields to group 1, albeit on a smaller area.

The reason why Cottco and Cargill's dominance remained largely unchallenged during the 1990s is open to some debate and speculation. Explanations that have been offered include:

- Reluctance on the part of the Ministry of Agriculture to allow new entry, perhaps related to the government's continuing stake in Cottco¹⁷;
- The strong performance of Cottco and Cargill, including the attractive seed cotton prices paid to producers and the effectiveness of Cottco's credit scheme. The pricing analysis presented in Table 7 (below), particularly the prices paid during 1997-2000 as a share of the ex-ginnery value of lint, lends strong support to this latter view.

Whatever the case, the situation has changed dramatically in recent years, as the number of firms participating in the cotton sector has increased rapidly (Table 2). Cottco argues that their well-publicised good performance over a number of years eventually encouraged other companies to enter the sector¹⁸. However, we highlight two more immediate factors that catalysed the change. Firstly, with the onset of economic crisis in 2001 and the expanding gap between official and parallel foreign exchange rates, some enterprises sought new ways of generating foreign exchange, either to purchase intermediate inputs for their core businesses or as a route to profit in itself. Cotton provided just such an avenue for foreign exchange generation. Secondly, the seed cotton pricing decisions taken by the established companies during 2001-03 resulted in particularly high profits (see below), which encouraged other firms to enter. We estimate that the number of firms buying seed cotton increased from five during 1999/2000 – 2000/01 to eleven in 2002/03 – 2003/04 and seventeen in 2006/07.

Table 2 lists the companies that we are aware of. Perhaps not surprisingly, since the onset of the political and economic crisis, most of the new entrants into the cotton sector have been either Zimbabwean-owned or from other developing countries, rather than major international trading companies. Levels of prior experience within cotton industries vary, but none have a track record of operations within a highly quality-conscious sector, such as Zimbabwe pre-2001.

¹⁷ The government did offer occasional support to Cottco during this period. For example, during the 2000/01 season the government allocated Z\$300 million to Cottco's input credit scheme. However, the current authors have not seen any evidence that government links to Cottco led to the discouragement of competitive entry into the cotton sector during this period.

¹⁸ As a listed company, Cottco has to publish accounts on an annual basis and, as Cottco is one of the country's largest companies, these are widely covered in the local media. The company's annual reports were also a valuable source of information on the sector as a whole. In fact, Cottco has now decided that they were too valuable and has started to provide less information in its public reports for fear that competitors were learning too much of commercial value from them.

Table 2: Cotton Buying and Ginning Companies in Zimbabwe (1994 – 2007)

Company Name	Ownership / Capital	Operation Period	Own Ginneries?	Comments
Cottco	Zimbabwe	1994/95 –	Nine	Ongoing
Cotpro	Zimbabwe / France	1994/95 – 1999/00	Transferred to Cottco	Ran into liquidity problems after heavy investments in a ginnery
Cargill	US	1995/96 –	Three	Ongoing
Tarafern / Romsdale	Zimbabwe / UK (Plexus)	1998/99 –	One	Ongoing
Chollima / Mothercare	Zimbabwe	1999/00 – 2004/05	No	Chollima was an association of indigenous farmers. Always small; seed cotton purchases sporadic
Farmers' World	US	2000/01 – 2002/03	No	Core business was input supply; ceased cotton business after investment in a fertilizer manufacturing plant
FSI Agricom	Zimbabwe	2001/02 –	One	Company placed under reconstruction in 2003/04 largely as a result of overtrading; subsequently subject of a management buyout; now operating at lower level
Dynamic Cotton (New Cabb)	Tanzania	2001/02 –	One	Ongoing
IDAI Modzone	Iran	2002/03 – 2003/04	No	Textile company; foray into seed cotton production and ginning shortlived
Bartco	Zimbabwe	2002/03 – 2003/04	No	No longer operational
Comtex	Zimbabwe	2002/03 –	No	Formerly Blair Pvt Ltd
Grafax	India	2002/03 –	Two	Ongoing
Alliance Ginneries	Kenya	2002/03 –	One	Ongoing
Insing Investments	India	2003/04 –	Two	Ongoing
Parrogate	India	2004/05 -	One	Ongoing
Olam Zimbabwe	Singapore	2005/06 -	One	Ongoing
Cynthesis	Zimbabwe	2005/06 -	No	Company owned by top government officials
ZESA Enterprises	Zimbabwe	2005/06 -	No	Owned by electricity parastatal
Cottrade	Zimbabwe	1998/99 –	No	Export agents (brokers) only until 2003/04 when halted operations due to exchange rate appreciation; re-entered in 2005/06 as company supporting smallholder production and buying seed cotton on own account
REA	Zimbabwe	2006/07	No	New
Relcor	Zimbabwe	2006/07	No	New
Armgrain	Zimbabwe	2006/07	No	New
Fleming	Zimbabwe	2001/02 –	Yes	Provides contract ginning only; does not buy cotton on own account

Source: Hanyani-Mlambo et al. 2005; Ministry of Agriculture

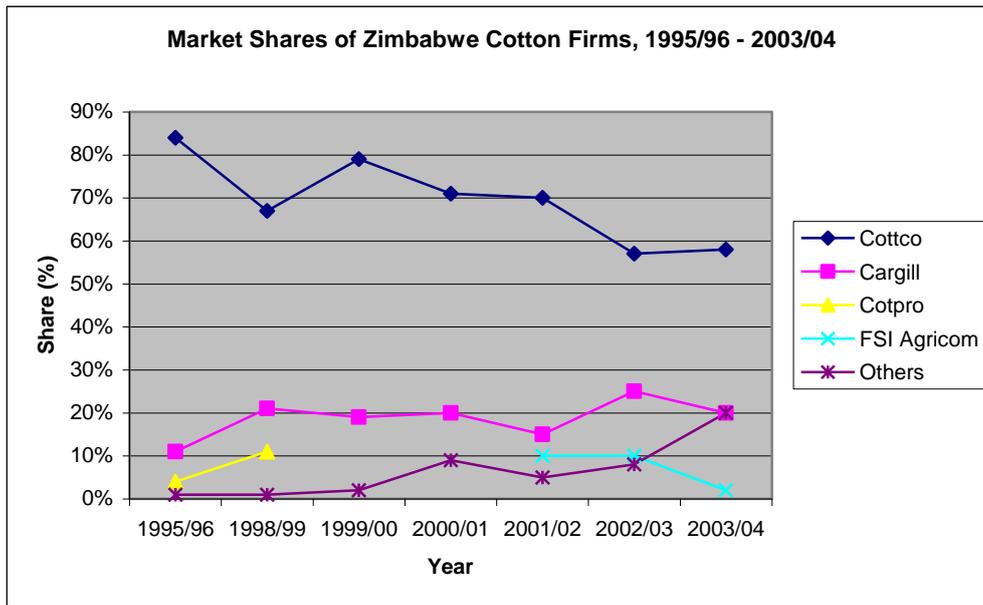
Ginning capacity has also increased with the entry of new firms. Hanyani-Mlambo et al. 2005 report national ginning capacity as 600,000 tons of seed cotton p.a.¹⁹, which

¹⁹ By 2007 this figure stood at 670,000 tons p.a. [John Battershell, pers.comm.].

gives a current capacity utilization rate of only around 50 percent. At this level, it is perhaps not surprising that there is something of a scramble for seed cotton²⁰.

Figure 5 assembles data on market shares over the post-liberalization period. This shows that, after an initial adjustment following the entry of Cotpro and Cargill, Cottco's market share remained at around 70 percent until 2001/02. However, in 2002/03 it fell to below 60 percent. Moreover, the combined share of the two main firms fell to around 80 percent. In 2006 Cottco purchased around 130,000 tons of seed cotton out of a total harvest of around 260,000 tons, which indicates that its market share had fallen further to 50 percent.

Figure 5: Meet Shares of Zimbabwe Cotton Firms, 1995/96 – 2003/04



Sources	1995/96	estimate based on Larsen (2002)
	1998/99	Larsen (2002)
	1999/00-2001/02	Mlambo and Poulton (2002)
	2002/03	estimate based on Mlambo and Poulton (2003)
	2003/04	Mlambo and Poulton (2004)

This is still a fairly concentrated sector. However, there is now vigorous price competition for the purchase of seed cotton, a phenomenon that did not exist in the Zimbabwean sector prior to 2001. Moreover, as already indicated, the change in market structure and the associated changes in market conduct have had major implications for the provision of input credit within the sector and for the maintenance of the quality control procedures necessary for achieving the uniform, high quality lint for which the Zimbabwean sector has historically been renowned.

3.5.Lint Export

Up until 2000, the agriculture sector accounted for around 50 percent of Zimbabwe's exports, with year-to-year variations according to weather patterns. Within agricultural

²⁰ Critics of the fact that some companies can gain EPZ status for their ginning operations also note that it makes little sense to grant tax and other concessions to new companies to expand ginning capacity in a sector that already has excess capacity. However, the country is so short of foreign exchange that it appears ready to take whatever investment it can get.

exports, tobacco was the dominant sector, accounting for 50 percent or more of export value. Cotton was the second most important export crop, with lint exports accounting for 12-17 percent of agricultural exports²¹.

Since the onset of the fast-track land redistribution program in 2001, tobacco production and exports have declined sharply. Thus, some web-based and local sources claim that the value of Zimbabwe's cotton exports has exceeded that of tobacco exports over the past two seasons. By contrast, while recording a decline in the value of tobacco exports, international sources show that these are still worth more than cotton exports. For example, figure 6 presents the data on FAOSTAT (downloaded 19/10/2006).

Figure 6: Exports of Cotton and Tobacco Products from Zimbabwe

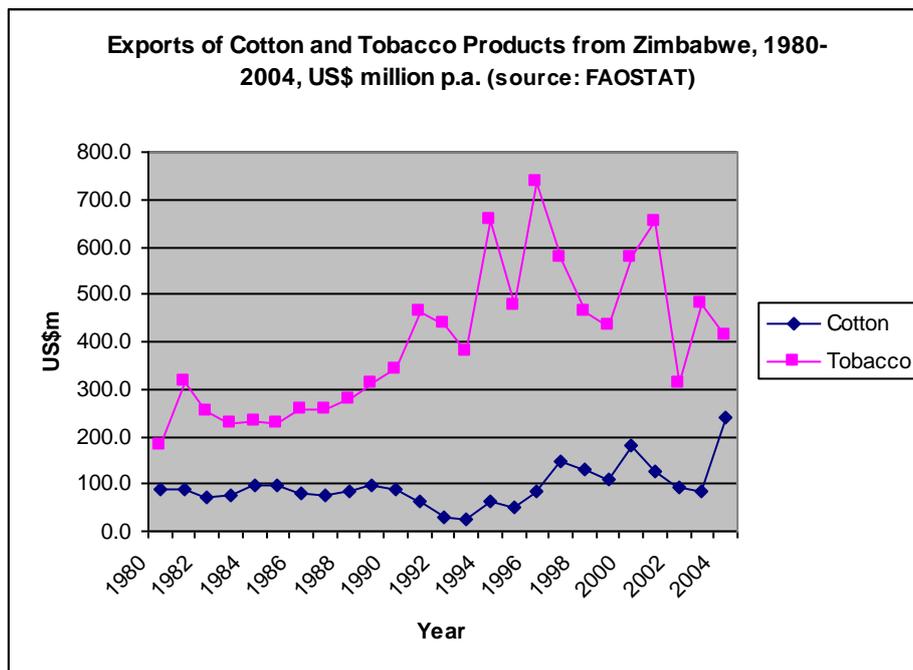


Table 3 presents a range of estimates on the value of recent cotton exports. While ITC and FAOSTAT figures are very similar, the magnitude of the jump in lint export volume and value in 2004 is surprising, the high prices early in the year and the good harvest that year notwithstanding. Based on ITC data, cotton lint accounted for around 9 percent of all Zimbabwe's exports in 2000 and 2001 and 12.4 percent in 2004 (compared with 23 percent for tobacco).

ICAC data show the principal destinations for Zimbabwean lint exports between 2000/01 and 2004/05 to have been South Africa, Thailand, Italy, Portugal and Taiwan, which between them accounted for 69 percent of lint exports (by volume) over this period. However, Indonesia, China and India have all grown in importance as export destinations since 2003/04. In 2004/05 these three countries accounted for 24 percent of lint exports (by volume).

²¹ source: http://www.fao.org/es/ESS/compendium_2005/pdf/ESS_ZIM.pdf [accessed October 2006].

Table 3: Contrasting Estimates of Zimbabwe Lint Exports

Export (tons)							
	2000/01	2001/02	2002/03	2003/04	2004/05		
ICAC	123,600	67,200	70,000	77,800	95,200		
	2000	2001	2002	2003	2004	2005	2006
FAOSTAT	139,650	69,427	82,550	69,771	173,408	109,486	
Local sources							80,000
Export Value (US\$m)							
	2000	2001	2002	2003	2004	2005	2006
FAOSTAT	180.7	127.2	92.4	84.0	236.8		
ITC	178.0	113.2	117.1	N/a	239.3		
Local sources					150	60-80	102

Notes: ICAC figures are for the international marketing season commencing August 1st; latest FAOSTAT data sourced 9/3/2007; ITC data downloaded from <http://www.intracen.org/tradstat/sitc3-3d/er716.htm> on 19/10/2006; local sources include: http://english.people.com.cn/200609/11/eng20060911_301450.html; <http://allafrica.com/stories/200609200335.html> [both accessed October 2006].

Given the share of seed cotton purchase that they account for, Cottco and Cargill also dominate lint export. However, it is our understanding that all the firms listed in Table 2 as seed cotton buyers also export lint.

Finally, it is worth mentioning the role briefly played by Cottrade, an initiative of CCGA that mostly served commercial cotton farmers, but also sought to assist organized groups of smallholder farmers²². Cottrade assisted clients to gin their seed cotton on a contract basis and then to identify overseas buyers for the resulting lint, along with domestic buyers for the cotton seed. Cottrade charged a 2 percent commission on all income received from the seed cotton as a result, while the growers were responsible for paying the toll ginning and associated transport fees. In 2001/02 producers with the necessary volumes and ability to wait for payment could obtain a net income of around Z\$200 per kg of seed cotton sold through this route, compared with the price of Z\$56 per kg paid by Cottco and Cargill. Similarly, in 2002/03 producers obtained between Z\$700 and Z\$1600 per kg of seed cotton sold through Cottrade, compared with closing prices of Z\$400-600 per kg offered by the buying companies. However, with the correction in the real exchange rate in 2003/04 (see Figure 2), this differential disappeared and Cottrade suspended its operations. In 2005/06 it commenced operations as a more conventional cotton production company, contracting smallholder producers to grow seed cotton that it could then buy and gin.

3.6. Domestic Textile Industry

Zimbabwe developed a textile industry to supply the domestic market during the UDI period (1965-1980), but this industry has struggled for much of the post-Independence period. For much of the 1980s and early 1990s it was protected by a policy that forced the CMB to supply its lint needs at subsidized prices. However, this policy was abandoned when the cotton sector was liberalized. Several textile firms went bankrupt at this point, including one of the biggest, Cone Textiles.

Subsequently, there has been some restructuring of the industry. Notable developments here have included the acquisition of Cone Textiles by Iranian-Zimbabwe firm Modzone Textiles and the 1998 acquisition of SK Textiles by Cottco to form Scottco.

²² Minimum consignment size was 25 tons of seed cotton.

Scottco produces knitting yarns, about 20 percent of which it sells to local end-users, such as toweling manufacturers. The majority of the yarn is, however, exported to South Africa and Europe (source: Cottco Company Profile). According to ITC data (source as above), in 2004 Zimbabwe exported yarn, woven fabrics and other textiles worth US\$32.5 million and clothing items worth US\$10.8 million. Over the period 2000-2004 the combined export value of yarn, woven fabrics and clothing items was 33 percent of the value of lint exports.

Textile exports notwithstanding, much of the Zimbabwe textile industry continues to struggle for survival. To prevent the collapse of local textile firms, with the associated and politically damaging loss of employment, cotton companies are currently required to sell 30 percent of their lint on the domestic market. Moreover, far from selling at import parity, the price in this artificially well-supplied market in late 2006 – early 2007 was below our estimate of the ex-ginnery cost price of lint²³. Not surprisingly, some firms have tried to evade the 30 percent domestic sale requirement while most send their poorest quality lint to the domestic spinners²⁴.

In 2005/06 official policy of the Ministries of Agriculture and of Industries and International Trade was that cotton firms could only obtain an export licence for their lint if they could show that they were also selling 30 percent of their output domestically. However, as already noted, some cotton companies are registered under EPZ regulations, which require them to export 80% of their output, and were able to acquire export licences for their entire output. According to *The Herald* newspaper of 15/02/2007, five of the companies listed in Table 2 - Alliance Ginneries, Comtex, New Cabb View, Grafax and Zesa Enterprises – have been told that they will not be given an export licence for 2006/07 because they did not fulfil the requirement in 2005/06 of selling 30 percent of their output on the domestic market.

3.7.Oil Sector

Until recently, the market for edible oil in Zimbabwe has been dominated by three locally-based oil expressers: Olivine, National Foods and United Refiners. These produce high quality, refined oil, which, prior to 2001, was composed of soya oil and cottonseed oil in roughly equal proportions. However, even in 2000, about 20 percent of the country's estimated annual consumption of 90,000 tons of oil per year was supplied by imports.

According to FAOSTAT, soya production in Zimbabwe rose rapidly in the later 1990s, peaking at around 175,000 tons in 2001. Although smallholder production was rising during this period, in 1999 communal farmers still only accounted for 2-3 percent of national production, the rest coming from commercial producers (Rusike et al. 2000). With the onset of the fast track land redistribution program, therefore, soya production contracted rapidly. During 2002-2005 annual production averaged 90,000 tons (FAOSTAT). With cotton production also recently lower than in 1999-2001, the

²³ We have been given two price quotes: 1) Z\$3000 per kg of lint, which, charged at a blend exchange rate (higher than the one we use later in this report), was translated as US\$0.33 per lb; 2) US\$0.30 per lb (using an unspecified parallel exchange rate). By contrast, our estimate of the Zimbabwe ex-ginnery lint price is US\$0.43 per lb.

²⁴ Some of the smaller cotton firms, with poorer quality reputations, then complain that domestic textile firms do not want to buy their lint – a reason that they give for having exported more than the 70% that they are supposed to export.

established oil expressers have been short of local raw materials and unable to obtain foreign exchange to compensate with imported materials.

The result is that cooking oil is one of the basic commodities that is currently scarce in Zimbabwe. Imported oils (allegedly of variable quality) are available on supermarket shelves in the main urban centers, but at prices that poorer consumers find difficult to afford.

In response to these shortages, at least three of the newer cotton companies (Grafax, New Cabb View and Parrogate) have invested in oil processing facilities, much as in Tanzania in recent years. They claim that their oil is a refined product, comparable to oil produced by the established oil expressers (a claim that the latter contest), although they admit that it takes time to perfect the processing process to achieve high quality. However, when oil from the established oil expressers is simply not available, consumers have to take what is available.

The established oil expressers are clearly uneasy at the new competition, not least because it directly reduces the local cottonseed supplies available for them. As they are represented within the National Cotton Council, it is feasible that they could try to restrict the growth of such competition. However, we do not see any case for regulation. Rather, we see three possible scenarios for future competition between the established oil expressers and new competitors:

- Once the period of national scarcity is over, consumers return to their traditional preferences for the high quality products of the established expressers;
- The new companies improve their quality so as to be long-run competitors to the established expressers, selling comparable products (their stated aim);
- The new companies service a lower income market with a lower quality, but cheaper, product, leaving the upper end of the market to the established expressers. This final scenario has intriguing parallels with the rise of maize hammer milling in the early 1990s (Jayne et al. 1995) and would be a good, pro-poor outcome.

In the meantime, we assume that new entrants are making good profits from their oil businesses, given the general shortage in the market. In early February 2007, a two litre bottle of imported cooking oil (from South Africa) was retailing for ZW\$15,000 in Harare (US\$3.20 at the parallel exchange rate), while in Muzarabani no cooking oil was available in the main general stores, but 750ml bottles of oil produced by one of the new cotton companies could be obtained nearby for ZW\$8500 (US\$1.80). We were quoted a buying price for cottonseed of US\$95 per ton, which equates to US\$0.475 per litre of oil, assuming an 18 percent extraction rate and a 0.9 conversion factor from litres to kg.

3.8. Transport Services

Cotton companies rely heavily on private transporters of various sorts both to evacuate seed cotton to their ginneries and to transport their lint from the ginnery to the point of sale (if not sold f.o.t. ex-ginnery).

Until 2002, all cotton producers were required to deliver their seed cotton to a recognized buying post where it would be graded. Following the increase in the number

of companies buying seed cotton, which coincided with increasing difficulties in obtaining fuel, companies began offering to buy cotton at farmers' homesteads and/or reimbursing those farmers who transported their own cotton to a buying post. Typically, local tractor owners are contracted to collect seed cotton from homesteads and they or owners of small trucks are contracted to take it from the buying post to a larger depot (if appropriate). Depots are normally located on major roads. From there, larger trucks take the assembled seed cotton to the ginnery.

As already noted, owners of transport in rural areas may experience difficulties in obtaining fuel for their vehicles. Therefore, as part of the contract, cotton companies may supply fuel to the contractor, the value of which is subtracted from the contract fee.

Most lint for export passes through the port of Durban, although Beira may also be used. The most common way of transporting lint to Durban is by rail, although the lint may have to be taken a considerable distance by truck before it arrives at the nearest railway stop.

4. Current Institutional Arrangements and Performance

4.1.Regulation of the Zimbabwe Cotton Sector

Since liberalization, the National Cotton Council (NCC) has provided a forum at which major stakeholders can meet to discuss strategic issues facing the cotton sector. Major stakeholders include cotton companies, farmers' unions, the Ministries of Agriculture and Industry, input suppliers, textile companies and oil processors. As has been shown to be beneficial in multi-stakeholder fora in other contexts (Hall and Soskice 2001), the Ministry of Agriculture has been but one player amongst many within the NCC, not a dominant force.

When the number of cotton companies was few, it was feasible for all of them to attend NCC meetings if they so wished. New entrants into the sector were encouraged to participate in the NCC, which promoted practices such as the adoption by all seed cotton buyers of four standard grades during primary marketing.

As the number of cotton companies increased, so concerns about side-selling of seed cotton undermining the viability of credit schemes and about the impact of increased competition on lint quality escalated. It became clear to established players within the industry that, while fairly informal coordination had been enough to direct an industry where the two major cotton buying firms between them controlled 90 percent or more of the market, a different form of regulation was required where smaller companies accounted for 20 percent or more of the market²⁵. In particular, a clear legal basis for regulation was required.

²⁵ The history of the Ghana cotton sector also demonstrates the difficulties of achieving coordination in a sector where there are 10+ firms with a CR3 of around 80% (Poulton 1998; Poulton et al. 2004). The Ghanaian experience suggests that, without a new regulatory framework, the Zimbabwe sector may prove unable to sustain its support for relatively intensive seed cotton production by smallholder producers and/or its reputation for high quality lint.

Therefore, in 2004, established NCC members drafted new regulations for the sector and presented these to the Minister of Agriculture. The draft regulations proposed that the Minister devolve much of the regulatory responsibility for the sector to the NCC²⁶. According to the draft of 31/03/2004:

- The NCC would draft a code of conduct for players in the sector, which would cover aspects of quality control (e.g. standards for seed cotton grading rooms) as well as “sanctity and fairness of contract between growers, buyers and sellers”;
- The NCC would have to recommend a buyer for licensing by the Ministry before they could participate in the sector. All licences would have to be renewed annually;
- Seed cotton purchase would have to take place according to national standard grades;
- The NCC would appoint a “national arbitrator” to check compliance with these national standard grades (presumably if one company brought a complaint against another);
- Requirements for packaging of both seed cotton and lint were specified, with use of polypropylene prohibited;
- The NCC would establish a Cotton Variety Committee to specify which varieties of seed cotton could be grown in which parts of the country;
- Persons or companies in breach of the regulations could be fined or imprisoned.

As of early 2007, the Minister of Agriculture has not taken the necessary action to give these regulations the force of law. However, there have been two significant developments in the past year.

Firstly, there has been a restructuring within the NCC. This is no longer a forum where all players with a stake in the sector meet. Instead, major stakeholder groups (e.g. cotton companies, farmers, oil processors) select members to represent them at NCC meetings. There is one annual meeting, (to be) known as the National Cotton Association meeting, at which the deliberations of the NCC are presented to all stakeholders. Otherwise, individual stakeholders engage with NCC debates through their representatives.

Related to this, the National Association of Cotton Ginners, Merchants and Buyers (NACGMB) has been formed. All cotton buyers and ginnerers are expected to join NACGMB, which sends two representatives to the restructured NCC. At the time of writing, the two NACGMB representatives are the Chairman of Cottco, who has been a prime mover behind the wider restructuring of sector governance and also of the new regulatory framework described below, and someone from Olam, who has been selected to represent the interests of newer companies. In our research, we have not

²⁶ According to the 31/03/2004 draft of the regulations, National Cotton Council was defined as “a registered body with Articles of Association, representing the cotton industry in Zimbabwe. Members will include, but not be limited to, all registered grower organizations, ginning and marketing companies that purchase and/or sell cotton, its products and by-products, merchants, seed companies, the Cotton Research Institute, The Ministry of Agricultural and Rural Development and The Ministry of Industry and International Trade. Ex-officio members will include the Zimbabwe Textile Manufacturers Association, oil expressors, stock feed manufacturers and agricultural inputs and chemical suppliers.”

gathered views of cotton companies on the functioning, effectiveness or representativeness of NACGMB, which is still a relatively new organization.

The second significant development is the introduction of new conditions that cotton companies must fulfil if they are to obtain an export licence. In the absence of a clear legal basis for regulation, the granting or withholding of an export licence is the main point at which leverage can be exerted over the conduct of cotton companies. NACGMB – and, as noted above, particularly Cottco – have, therefore, convinced the Ministries of Agriculture and of Industry and International Trade that export permits should only be given to cotton companies that fulfil certain criteria. In 2006 the sole criterion stipulated was that a company should sell 30 percent of its lint to the domestic textile industry. In 2007 a second criterion has been added: that the company pre-finance cotton producers. As will be discussed in section 6, the practical implementation of this second criterion in 2006/07 will have profound implications for the competition-coordination balance within the sector.

As an extension of this approach, NACGMB has also drawn up a code of conduct for cotton companies that incorporates much of what was in the 2004 draft regulations. In the future, it is envisaged that NACGMB will recommend to the two ministries whether or not a company should receive an export licence and that this recommendation will be based on whether or not they have adhered to this code of conduct in their past operations.

Finally, we note the particular role played by farmers' organizations in the governance of the Zimbabwe cotton sector. As noted earlier, in the pre-Independence period, the National Farmers' Union (NFU) had considerable influence over policy decisions affecting the cotton sector. To some extent, this continued through the 1980s, when the NFU had become the Commercial Farmers' Union (CFU). Naturally, however, the influence of the CFU declined as commercial farmers exited the sector.

After 1980, other farmers' unions developed alongside the CFU, including the Zimbabwe Farmers' Union (ZFU) and the Indigenous Commercial Farmers' Union (ICFU). For a number of reasons, these newer organizations exert less power within the sector than NFU once did. They are fragmented, rather than united. They do not have the financial or other resources that NFU had²⁷; and they face much more daunting challenges in terms of reaching out to, and communicating with, a poorer, more numerous, more dispersed and in some cases semi-literate membership base.

Nevertheless, in a concentrated sector, they have a potentially vital role to play in sector governance and perhaps, in particular, in seed cotton pricing. The seed cotton pricing story is told in more detail below. However, here we note that in 2004 many farmers were unhappy with the seed cotton prices that they were being offered by the cotton companies and for a time withheld their seed cotton waiting for prices to rise. Eventually, this prompted the Ministry of Agriculture to convene a meeting of all the main sector stakeholders to discuss a reasonable price.

²⁷ ZFU has received capacity building support from a number of donor organizations since 1980. However, in recent years, perhaps due to the deteriorating political climate in Zimbabwe, this assistance has been scaled back. We have also been told that, in the difficult current funding climate, ZFU receives some operational funds from Cottco (mainly to enable its officials to attend NCC meetings). This, however, would tend to reduce its ability to challenge Cottco or allied cotton companies if ZFU felt that farmers were being given a raw deal.

Since that time, in a bid to prevent a repeat of the 2004 stand-off, an NCC pricing committee has met to discuss seed cotton prices in advance of the buying season. This committee is said to consider a number of factors in advising what a reasonable price might be. These include the world lint price, ginners' costs (and desired margins) and farmers' costs of production, on top of which there is an aspiration that farmers achieve a 25 percent margin. In neither 2005 nor 2006 have farmers been particularly impressed with the price that company representatives within the committee proposed to pay. However, in 2006 price competition between companies took off and rendered the unresolved price negotiations between companies and farmers' unions redundant. As a result of this competition, our calculations (presented below) suggest that most farmers did receive a 25 percent margin on their costs. As discussed in more detail in section 6, however, price competition between companies could be greatly reduced in 2007, which makes the role of farmers' unions in negotiating fair prices for producers far more important. For the reasons already set out, there are grounds for fearing that, in their current state, the unions are not strong enough to strike a hard, but well-judged, bargain with the companies.

4.2.Public Investment in the Cotton Sector

In the past, public investment in the cotton sector has taken two main forms: subsidies to the CMB to cover operating losses and support for the work of the Cotton Research Institute. However, the main function of the former was to compensate for the subsidized prices at which the CMB was forced to sell lint to domestic textile companies, so arguably this was more of an investment in the textile sector than in the cotton sector.

Since liberalization, cotton companies have basically operated without public support (although see footnote 16 for an exception). Meanwhile, as reported by Hanyani-Mlambo and Poulton 2004 and Hanyani-Mlambo et al. 2005, since the onset of economic crisis in 2001, central government funding for the Cotton Research Institute has run at very low levels. Public investment in the cotton sector is thus currently close to zero.

At the local level, cotton companies complain that they pay site and buying post licence fees to local authorities, which are supposed to contribute towards the cost of road maintenance in their districts (cotton companies being some of the major users of rural roads in cotton producing zones). However, they do not see as much investment in road maintenance and construction as they would expect.

4.3.Research and Extension

Mariga 1994 attributed a large share of Zimbabwe's cotton success to extensive crop research supported by effective extension. The Cotton Research Institute (CRI), based in Kadoma and established in 1925, remains the key player in cotton research. CRI is a research establishment under the Department of Agricultural Research and Extension (Arex) in the Ministry of Lands, Agriculture and Rural Resettlement. Over the decades, it has been responsible for breeding a succession of improved varieties as well as testing agro-chemicals and developing techniques for their use.

Table 4 shows that CRI has continued to develop new varieties of seed every four-six years, despite ever more pressing funding constraints – a level of performance not matched in any other southern or eastern African country.

According to Hanyani-Mlambo et al. 2002, the main varieties grown by farmers in 2001/02 were SZ9314, FQ902 and LS9219, specific varieties developed for the different cotton growing regions. Due to better access to irrigation facilities and resource endowments, large-scale commercial farmers were free to grow any variety of their choice, but smallholder farmers are advised to observe specific recommendations ideal for their particular environments, resource endowments and management capabilities.

Table 4: Release Dates and Key Characteristics of Recommended Cotton Varieties.

Cotton Variety	Year of Release	Key Attributes
Medium Staple		
Albar BC 853	1989/90	Storm proof and can be grown under both irrigated and dryland low-input conditions. Has better tolerance to verticillium wilt than all other varieties.
Albar FQ 902	1993/94	Drought tolerant but performs well under irrigated, high-input conditions. Susceptible to red spider mite attack.
Albar AG 4869	1993/94	Under good management conditions, forms bolls right to the top of the plant. Very susceptible to verticillium wilt.
Albar SZ 9314	1999/00	Storm proof, good recovery potential from stress conditions and can produce a top crop if managed well.
CRI-MS1	2006	15% higher yield than SZ 9314; modest improvements in fibre length and strength
CRI-MS2	2006	Early maturing; high resistance to verticillium wilt and jassids
Long Staple		
CY 889	1993/94	Has some tolerance to verticillium wilt when produced under high management conditions.
LS 9219	2000/01	Performs well under both low- and high-input conditions. Does not defoliate under medium to low wilt infection.

Source: Quton Seed Company's Variety Guide (2001/2002); discussion with Dr.L.Gono 7/02/2007

Unfortunately, in recent seasons the activities of CRI have been seriously impeded by lack of funds and understaffing challenges. In 2003/04 the research institute had six researchers out of a staff establishment of eight full-time researchers. Moreover, high staff turnover due to low remuneration and poor working conditions had resulted in reliance on young, inexperienced researchers (Hanyani-Mlambo et al. 2002). As of February 2007, seven of the research posts were filled and the young researchers were gaining in experience, but the staffing situation could not be described as assured.

Government funding allocation to CRI has been declining in real terms over the years and this has been compounded by recent economic crisis and hyperinflation. However, CRI also receives some funds through the EU's STABEX program (earmarked for particular projects) and has a contract with Quton Seed Company in which Quton pays a royalty of 5 percent for CRI cotton varieties that it multiplies and markets (see below). In addition, CRI does contract research for chemical and fertilizer companies²⁸. In 2004, of the ZW\$ 2,093 billion core CRI research budget allocation, ZW\$ 2,0 billion

²⁸ For example, in 2006/07 CRI is testing a foliar spray for one of the main agro-chemical companies in the country.

came from Quton royalties and only ZW\$ 93 million was contributed directly from government funding (Hanyani-Mlambo et al. 2005).

While the contract with Quton has undoubtedly sustained CRI's research activities in recent years, it has also created a dependence on Quton. This is coming into sharp focus now, as Quton has been developing its own research/variety development program since 2001 (perhaps in turn reflecting Quton's uncertainties about the future of its relationship with CRI). Quton's research team comprises two experienced breeders, two agronomists, plus a research technician and field support staff. They have imported germplasm from a number of countries for breeding purposes, but report increasing difficulties in accessing germplasm, as use rights are increasingly controlled by a small number of multinational seed companies. Quton has submitted their first three varieties to Seed Services (the government body responsible for variety approval) and these could be released by the end of 2007. As its own varieties approach release, Quton's incentive to multiply and market new varieties emanating from CRI (for example, the two varieties released in October 2006) falls. It is presumably only a matter of time before the stream of royalties received by CRI begins to dwindle.

Discussions about a possible merger between Quton and CRI are, therefore, at a very preliminary stage (the relevant parties are Quton, CRI and Ministry of Agriculture and they have not all met together).

Reflecting the demands of international spinners, the main current emphasis in the breeding programs of both CRI and Quton relates to fibre quality. In interviews with Dr. Gono of CRI and Mr. Mtetwa of Quton in early 2007, increased fibre length and strength were listed as the two main breeding priorities, with other fibre characteristics such as elongation and micronaire also mentioned.

On the extension side, since liberalization, government extension staff (now part of Arex) have collaborated with "loans and extension officers" employed by Cottco and other companies to promote cotton production. However, companies complain that Arex staff have diminishing budgets, so their participation at meetings has to be resourced by the companies. In addition, where competition is fierce, some company staff are reluctant to invite Arex staff to meetings in case they pass on "commercially sensitive" information to competitors.

Figures collected by Hanyani-Mlambo and Poulton 2004 for four major production districts showed that the ratio of company extension officers to farmers serviced by the companies in question²⁹ ranged from 1:100 (Cargill in Gokwe South / Binga) to 1:1000+ (FSI Agricom and IDAI Modzone in the same area). However, the figures showed considerable variation across areas even within a given company. The ratio depends on a number of factors, including whether a company is targeting expansion in a particular area and how many active village Chairmen or group leaders the extension agent can collaborate with in the area. Indicative figures collected during February 2007 fell within the wide range given above. However, we anticipate that much of the effort of front line staff this season will be devoted to input distribution and to monitoring production activity for credit recovery purposes, rather than to extension per se.

²⁹ "Serviced" here may mean only that the company bought seed cotton from this number of producers; it does not imply any particular level of pre-harvest service.

4.4. Seed Production and Supply

The Quton Seed Company, a wholly owned subsidiary of Cottco, is the sole producer and supplier of cotton seed in Zimbabwe. While in theory other companies could set themselves up in competition, none have attempted to do so³⁰. Under its contract with CRI, running from 2006 till 2010³¹, Quton is accorded exclusive rights to multiply and market cotton varieties developed by CRI, in return for which Quton pays CRI a royalty of 5 percent of the value of CRI varieties that it markets. As part of the working agreement, the breeding section of CRI develops, evaluates and maintains several cotton varieties, while Quton multiplies the seeds for sale to farmers and also to all the other cotton buying companies in the sector.

This arrangement has worked well so far, although the emerging tensions created by the maturing of Quton's own research efforts have already been noted. Quton is a dynamic company and has no incentive to abuse its monopoly position by charging excessive prices for its seed. If it did so, its owner, Cottco, would be the biggest loser, given that Cottco retains the biggest share of the cotton market.

Although Quton is well funded and managed, its seed multiplication program also faces its own challenges. Prior to the onset of the accelerated land reform program, multiplication of certified seed was undertaken almost exclusively by the remaining commercial cotton producers (the higher prices paid for certified seed making the activity still worthwhile for them). As these experienced commercial farmers have now disappeared from the sector, Quton has been forced to contract smallholder and newly resettled farmers to multiply seed. While the company works with high quality producers in selected (relatively remote) areas³², in a smallholder environment it is difficult to enforce "buffer" zones. (Ideally, no other cotton should be planted within 100m of cotton being produced for seed multiplication so as to prevent cross-pollination). It is also more difficult to ensure that the large number of contracted smallholders perform all the desired crop management practices. Quton testing procedures suggest that there has so far been minimal impact on cotton seed quality from the shift to small-scale producers for cotton seed multiplication. However, maintaining the quality of the country's certified seed has become more difficult (Hanyani-Mlambo and Poulton 2004).

Many of the stakeholders within the Zimbabwe cotton sector are keen to introduce GM seed technology. The requisite national biosafety framework is in place and the Biotechnology Authority within the Office of the President is supportive. However, so far no partner has been found that is willing to licence Quton to incorporate a Bt gene within existing local seed varieties. In 2004, Quton trialled a Syngenta "VIP" (Bt) variety in Zimbabwe. Initial findings were that the seed was very effective in controlling bollworm, but rights to the relevant Syngenta gene then passed to Delta and Pineland (D&PL) and the trial stopped. More recently, Quton has signed an agreement with D&PL that allows D&PL to incorporate their Bt gene into Quton varieties and

³⁰ Given Quton's exclusive right to multiply and market seed produced by CRI, any competitor would have to use imported seed. This would have first to be approved for local use, which involves a rigorous three-year trial process. Given the years of high quality research effort embodied in CRI seed, it is highly unlikely that any imported variety would outperform CRI-developed seed under Zimbabwean conditions.

³¹ This is an extension of a contract that initially ran from 2000 to 2005.

³² Remote areas are also selected as a way of reducing the side-selling of Quton seed to other companies. However, as Quton "only" pays a 20% premium over the prevailing Cottco price, while newer companies at times pay up to 50% more, side-selling can still be a problem.

market these within the region. Quton will receive royalty payments on any resulting sales, but the agreement apparently does not provide for any gene or germplasm flow in the other direction. Zimbabwean cotton stakeholders are, therefore, hoping that an Indian or Chinese partner can be persuaded to work with Quton to develop a local GM cotton variety.

4.5. Access to Fertilizers and Chemicals

Prior to the current economic crisis, Zimbabwe had a well-developed input supply industry³³ that originally developed to service the commercial farm sector, but which also extended to networks of local input stockists in communal areas. Since much land in the communal areas of Zimbabwe is poor (sandy), both state and cotton company extension activities have actively promoted the use of fertilizer for cotton production, as well as chemical use for crop protection. This has been backed up by the provision of credit for cotton production, first through AFC during the 1980s, then by Cottco - and more recently by other companies - in the liberalization era. Thus, smallholder cotton producers have been able to access seed, fertilizers and chemicals either through company credit schemes or (until recently) through cash sales by companies or purchases from local input stockists.

As a result of this, unusually amongst cotton producers in southern and eastern Africa, many smallholder producers in Zimbabwe regularly apply chemical fertilizer to their cotton. In two household surveys conducted by the DFID-funded “Competition and Coordination” project in Gokwe South and Muzarabani Districts in 2002 and 2004, 43 percent and 45 percent respectively of the cotton farmers applied inorganic fertilizer on their cotton plots. In the latter survey, average use by cotton farmers who did apply inorganic fertilizer was 110 kg/ha.

The 2004 survey found significant differences in fertilizer use between farmers who received input credit from a cotton company and those who didn't (Table 5). Farmers who received input credit from a cotton company also reported higher yields than those who didn't.

³³ According to Hanyani-Mlambo et al. 2002, compound fertilizers are manufactured locally, but some of the raw materials are imported. For example, basic nutrients for basal fertilizers such as nitrogen and phosphorus are sourced locally, while potassium and urea are imported. The major manufacturers of fertilizers in Zimbabwe in 2002 were the Zimbabwe Fertilizer Company (ZFC) and Windmill. Omnia and Farmers World were smaller companies that purchased ingredients from the bigger companies for blending. Hanyani-Mlambo et al. 2002 reported estimated market shares for chemical fertilizers as ZFC (40%) and Windmill (40%), with the remaining 20% shared amongst the smaller companies. Meanwhile, the majority of crop chemicals are imported. Again according to Hanyani-Mlambo et al. 2002, the key players in this field in 2002 included Syngenta, Windmill, Agricura, ZFC, Technical Services Africa, Crop Serve and Rarefield. Companies such as Windmill, Agricura and ZFC acted as distribution agents for Syngenta and other international chemical manufacturers. As well as importing products directly, some Zimbabwean agro-chemical companies were also involved in chemical mixing, repackaging and developing formulations that were more suitable for the local environment. With regard to crop chemicals, the estimated market shares were Agricura (40%), ZFC (30%) and Windmill (25%).

Table 5: Fertiliser Application by Cotton Farmers with/without Credit

Received Seasonal Credit?	Number	Number Using Fertiliser (%)	Mean Fertiliser Application (kg/ha) ⁺	Median Fertiliser Application (kg/ha)	Maximum Fertiliser Application (kg/ha)	Mean Seed Cotton Yield (kg/ha)
Yes	112	65 (58%)	67.7*	41.7	500	1087.7*
No	163	58 (36%)	36.7*	0	400	869.9*

* Means are significantly different (5% significance level)

+ Includes those not applying any

Source: 2004 household survey

The 2004 household survey also found that over 95 percent of cotton producers applied some crop protection chemicals. Considerable effort was made to ensure that reliable data on chemical application were obtained and a surprising finding of the survey was that on average, farmers sprayed their cotton crop ten times during the 2003/04 season³⁴. This figure was consistent with findings from earlier informal discussions with farmers in which they claimed that many farmers sprayed their crop with synthetic pyrethroids up to once per week for the first three months (November/December – January/February), then either once a week or twice a month with other chemicals for the next four months (February – April/May). Unlike, say, in Tanzania, it is common for a single smallholder cotton producer to use three or four different types of chemical on their cotton in the course of a season – an indication of the degree of development of the input supply system.

At liberalization, Cottco inherited the CMB's input credit scheme, which by 1993-94 already served over 40,000 producers (Woodend 1995). Credit repayment rates suffered in the years immediately following liberalization and the company had to tighten up its operations in 1997. As a result, Gordon and Goodland 2000 reported repayment rates of 98 percent - almost unique amongst seasonal lending schemes within Africa. Producers who received credit from Cottco had to be organized into groups, so that peer pressure could be brought to bear on those who were slow to pay. If someone refused to repay, the cotton company could decide to seize household assets.

Hanyani-Mlambo et al. 2002 and Larsen 2002 both suggest that about 70,000 producers were served by Cottco's input credit scheme at the end of the 1990s (in the latter case, this includes producers on the Cotpro scheme as well). However, The Cotton Company of Zimbabwe Ltd 2001 reported 44,593 participants in the scheme during 1999/2000, falling to 33,821 in 2000/01. (According to this report, repayment in 2000 was hit by Cyclone Eline, so fell to 93 percent). However, even with 70,000 producers receiving credit, this would only amount to around 25 percent of producers in the sector.

Over time Cottco has increasingly lent to producers who have established a track record of loan repayment, plus new producers who have clear capability to repay loans. Credit recipients have, therefore, generally been better resourced than those who did not qualify for credit. According to the 2004 household survey data, producers who received input credit from a cotton company on average cultivated 2.57 ha of cotton, compared with 1.62 ha amongst those not receiving credit. (This difference was statistically significant with 5 percent confidence interval). While there has, at least

³⁴ In the case of chemicals, no difference in application rates was observed between farmers receiving credit from cotton companies and those not doing so.

until recently, been a small minority of better-off smallholder households who preferred the independence that came with self-financing production, the majority of cotton producing households that had to buy their inputs on cash were poorer households.

When new companies began to enter the sector, many (including Farmers' World and FSI Agricom) initiated their own credit schemes as a way of competing with Cottco for farmer loyalty. Even Cargill, which entered the market straight after liberalization but chose not to operate an input credit scheme³⁵, began offering credit to known and trusted growers in 2002/03, recognising that it would lose some otherwise loyal growers if it did not provide a credit option when all competitors were doing this (Hanyani-Mlambo and Poulton 2004). Thus, the 2004 farmer survey found that 41 percent of cotton producers received credit from a cotton company for the purchase of one or more inputs (seed, fertilizer, chemicals) and, in a small minority of cases, also for the purchase of hired labour for weeding or harvesting. However, the same research found that new schemes often struggled to emulate the repayment rates achieved by Cottco (Hanyani-Mlambo et al. 2003; Hanyani-Mlambo and Poulton 2004).

At the same time, Cottco began to feel the effects of increased side-marketing of seed cotton by farmers whom it was supporting with credit. In 2002/03 real interest rates within company credit schemes were strongly negative in Zimbabwe's hyper-inflationary environment. Thus, many farmers apparently chose to sell enough seed cotton to the company that had provided them with credit to pay off their cash debt, but then to sell the remainder of their seed cotton to the firm that was offering the highest price for seed cotton. Cottco, with the largest credit scheme and the lowest seed cotton prices in 2003, was worst hit. After further problems with side-marketing in 2004, the company dramatically cut back its number of credit recipients for 2004/05 – to numbers well below those it inherited in 1994. However, the low harvest in this season, combined with the increasing difficulty that farmers were encountering in paying for inputs on cash (due to the very difficult economic circumstances), persuaded them to reverse the trend in 2005/06 and 2006/07. In the current season, the numbers of farmers that the company is supporting is back up close to its historic highs.

Nevertheless, the fact that some companies see the importance of extending seasonal credit, but others don't, remains a major source of tension within the Zimbabwean cotton sector. Cottco, in particular, resents the fact that other companies have been free-riding on its efforts to promote crop production. Cottco's decision to increase its seasonal lending for 2006/07 was thus linked to the agreement reached between the National Cotton Council and the Ministries of Agriculture and of Industry and International Trade that participation in input supply should be used as a criterion for being granted an export permit, i.e. all companies would have to provide input credit in 2006/07.

In theory, all companies are providing a broadly comparable package of seeds, fertilizer and crop protection chemicals to producers in 2006/07. Companies have been asked to provide evidence to NACGMB of the number of producers, the hectares of cotton production that they have supported and the value of inputs provided. (At the time of writing, this information is not public knowledge). A national register of all farmers who have received credit is being compiled, which may enable companies in the future

³⁵ Instead, Cargill sold inputs to producers at harvest time, ready for the next season.

to blacklist producers who default on their loans and perhaps also who deliver adulterated seed cotton (see below).

In 2006/07, therefore, we have a situation in which farmers' ability to buy inputs on cash has decreased with economic hardship and many input stockists have closed³⁶, but cotton companies are providing more support to producers than ever before. While as recently as 2004 we estimated that only 41 percent of cotton producers received any credit from a cotton company, the main companies estimate that only 5-10 percent of cotton producers will have self-financed their cotton production in 2006/07.

Our focus group discussions provide an interesting snapshot of the input supply and access situation in 2006/07 (Table 6). Questions about which companies serviced which farmer types were only asked in general terms in Muzarabani. When it became clear that established and new companies are servicing quite different farmers and to very different levels, more detailed questions were asked in Gokwe South to substantiate this.

Table 6: Inputs Supplied 2006/07, by Company and Farmer Type

Village	Farmer Group		
	Group 1	Group 2	Group 3/4
Chizeya (Muzarabani)	All companies will service	Cottco provides full input package; others do not give fertiliser	Cottco does not service; registered with Olam and others
Butau (Muzarabani)	All companies will service	All companies will service; 1/3-1/2 get fertiliser	Only served by newest companies; given seeds, no fertilizer, maybe some chemicals
Zharare (Gokwe South)	Cottco (5); full package of fertilizer and chemicals	Cottco (3), Insing (3), Grafax (1); Cottco farmers received 2 bags of fertilizer each and full chemicals; others no fertilizer and limited chemicals	Insing (3); Olam (1), "free" (3); registered farmers have received seed and one bottle of chemicals only
Mutamburigwa (Gokwe South)	Olam (5), Cottco (3), Cargill (1); full package for part of planted area	Olam (13), Cottco (4), Cargill (4), FSI (1), Insing (1); first four companies have tried to offer full package, but supply difficulties for all but Cottco	Olam (5), Insing (3), Cottco (2), Cargill (2), "free" (4)
			Olam (2), FSI (1), "free" (3)
			Few have been given any inputs other than seeds

Source: focus group discussions

Note: group 1 contains the largest producers

The Gokwe South focus groups, while at best only indicative of possible wider trends, suggest that the claim made by established companies that only 5-10 percent of producers have received no inputs on credit in 2006/07 is not far out. (This claim is disputed by some of the smaller companies). In Zharare village, 16 percent (3/19) of producers had not registered with, nor received any inputs from a cotton company in

³⁶ This would appear to be the result of both demand and supply side factors. In the maize sector, the government has distributed some fertilizer at subsidized prices, which would tend to reduce business for stockists. On the supply side, the fertilizer and chemicals industry has experienced escalating difficulties in obtaining foreign exchange. Cotton companies have thus had to assist fertilizer companies to enable these companies to provide them with fertilizer.

2006/07. In Mutamburigwa village, the figure was 13 percent (7/54). Given that these “free” farmers were all in groups 3 or 4 and were unsupported because they were too poor to be considered creditworthy by any of the companies, they would certainly account for less than 5 percent of the cotton produced in these villages.

The next point to note from Table 6 is the huge difference in the level of pre-harvest support received across farmer types. Contrary to expectations, it is certainly not the case that a broadly comparable input package has been supplied to all producers. Indeed, some of the producers in groups 3 and 4 who are registered with a particular company had, at the time of the focus groups (1-6/02/2007), received no input support beyond an initial distribution of seed for planting. There is thus some latitude for dispute at harvest time as to whether these farmers have really been “supported” by a particular company or are free to sell their seed cotton to whichever buyer they like. However, we note that no Cottco-supported farmer can claim lack of pre-harvest support as a reason for selling to another company.

The final point to note from Table 6 is the differences across companies in the types of farmers supported, as well as in the level of pre-harvest support given to these farmers. Thus Cottco and Cargill have high quality records, derived from years of experience in the Zimbabwe cotton sector, that permit them to select and work with the highest potential farmers. When signing up with Cottco or Cargill, these farmers know that they will receive the best pre-harvest support, but that they may also be forced to accept a lower seed cotton price at harvest time than may be offered by newer entrants to the sector. They, therefore, undoubtedly assess their chances of being able to side-sell some of the cotton that they produce and, if they conclude that this will be difficult, they then have to assess the trade-off between better yields arising from better access to inputs on the one hand and higher seed cotton price on the other. Using farm household models, Poulton 2005 found that households that could access a full input package on credit (as opposed to receiving no credit) were better off doing this even if they had to accept 40 percent lower seed cotton prices as a consequence.

By contrast, newer companies, with no internal database on the performance of different producers, find themselves working disproportionately with the poorer producers and/or producers who have been blacklisted by the established companies. This adverse selection problem facing newer companies was also noted by Poulton 1998 in the case of Ghana and can contribute to the perpetuation of side-selling practices by opportunistic farmers if the rate of entry by new companies is high enough.

Three reasons can be advanced as to why newer companies offer a much more restricted package of inputs to the farmers whom they serve than the established companies do. Firstly, in 2006/07 newer companies have undoubtedly experienced more difficulty in sourcing inputs than the established companies, which, over the years, have developed close links with the main input suppliers. For some of the newer companies, 2006/07 is the first season in which they have been involved in input supply. Fertilizer has been particularly scarce in 2006/07, due to the foreign exchange constraints experienced by local fertilizer companies; and Cottco gained competitive advantage by striking an early deal to ease that constraint for its own benefit. Secondly, newer companies have ended up dealing with producers whose ability to use and repay credit is, on average, much more limited than that of the top producers supported by the established companies. Offering a more restricted input package to such producers may well be a rational, risk-reducing strategy. Many of the group 3 and 4 producers have not

been credit beneficiaries in the past and, as a result, few will have made intensive use of inputs, either. Thirdly, some commentators question the commitment of some of the newer companies to the new rules of the game that have come into effect in 2006/07. They have only reluctantly been persuaded to get involved in input supply and are waiting to see how rigorously enforced the new rules are before they decide to invest wholeheartedly in the capacity to provide high quality pre-harvest services to producers.

Pricing of seed, chemicals and fertilizers has become a very tricky issue under Zimbabwe's hyper-inflationary conditions. In 2002/03 real interest rates within company credit schemes were strongly negative, which affected the quantity of seed cotton that companies received from borrowers. As companies made a loss on the credit transaction *per se* and were really interested in the resulting seed cotton supplies, in subsequent years they began charging more "realistic" interest rates. However, under 1000 percent+ (and highly unpredictable) inflation, companies could set input prices at planting time that sound extortionate to farmers, but still end up representing negative real interest rates. In 2006/07 the majority of companies have elected not to announce input prices when inputs are distributed³⁷. However, in focus groups farmers recorded their dissatisfaction with this arrangement, too, as they fear being "stung" by companies at harvest time, losing much of their revenue through unexpectedly high input costs.

4.6. Quality Control³⁸

One of the greatest concerns with increased competition in the Zimbabwe cotton sector is the negative impact that it is having on the quality of exported lint, making Zimbabwean lint less competitive on the international market. The Zimbabwean cotton sector was long admired for its effective quality control procedures, which started with the strict implementation of a four-class grading system at primary marketing. At the ginnery, Cottco undertook further sorting, such that it was able to grade the resulting lint into one of 40 categories that customers could specify when purchasing.

However, starting in 2001/02 the sector's quality control procedures came under strain as a result of the increased number of players in the system. In 2001/02, and to a lesser extent 2002/03, this was exacerbated by reduced cotton output as a result of drought, leading to a "rush" for cotton.

New entry and increased competition in the cotton sector can potentially exert a negative influence on the quality of exported lint through at least two channels:

- New entrants may have less experience in cotton quality management than established firms, leading to less uniform and lower quality lint, even if seed cotton quality remained unchanged. We have not investigated this issue, but note that new entrants, including those that operate their own ginneries, have varying experience in the international cotton business. While Tarafern / Romsdale is part owned by Plexus, an international lint trading company, none

³⁷ Olam may be an exception to this, but we have not obtained details of their prices, if indeed they have been announced in advance.

³⁸ Much of this section draws directly from Hanyani-Mlambo and Poulton 2004 and Hanyani-Mlambo et al. 2005.

of the more recent entrants can draw on comparable experience to either Cottco or Cargill.

- By undermining grading procedures at the point of seed cotton purchase, competition can undermine the incentives for producers to aim for high quality seed cotton. Thus, where producers know they will be paid a similar price irrespective of grade / quality, they have little incentive to be careful only to pick fully mature bolls when harvesting³⁹ or to pick quickly so as to avoid damage to open bolls from insects or dirt/dust while still on the plant. Moreover, if they believe that they will be paid in the same way in future, they have less incentive to exercise discipline and care at all stages of the production process (e.g. pest control), although many of the cultural practices conducive to achieving high quality are also necessary to achieve high yields. Inevitably, lower average quality seed cotton feeds through into lower quality lint.

In 2001/02, allegations of lax or no grading at primary marketing were levelled at new entrants into the sector and also at so-called fly-by-night buyers, who buy seed cotton to sell onto registered companies. Such players got bolder in 2002/03, with Dynamic Cotton being the first to offer flat rate prices for all its seed cotton purchases (irrespective of grade).

Perhaps surprisingly, even the larger companies felt compelled to follow suit to a greater or lesser degree, despite their claimed concern about the future impact on the cotton sector as a whole. Their retreat from grading standards could be observed in one of two ways. Firstly, they allowed (or even instructed) their graders to relax normal grading standards, so as to accommodate farmers' expectations on the grades of delivered seed cotton. In all major cotton growing regions, some farmers demanded better grades for their seed cotton in a context where, due to heightened competition, companies had little choice but to comply if they were not to lose the seed cotton to a competitor. In some cases, established companies also upgraded a proportion of delivered cotton bales as a way of encouraging second and third deliveries from a given farmer - a way of discouraging the side-marketing that was discussed earlier. Secondly, some depots and buying points followed their newer rivals and fly-by-night buyers in abandoning grading altogether, particularly as the competition for supplies reached its peak towards the end of the buying season.

During the 2003/04 season, the majority of primary marketing transactions were completed either without grading taking place or with grading being merely a formality from the farmer's perspective because a flat-rate price was given irrespective of grade. Some companies bought seed cotton from farmers without adhering to any grading system and instead opted to grade afterwards. Proper grading procedures were only followed (if at all) at the ginneries before ginning.

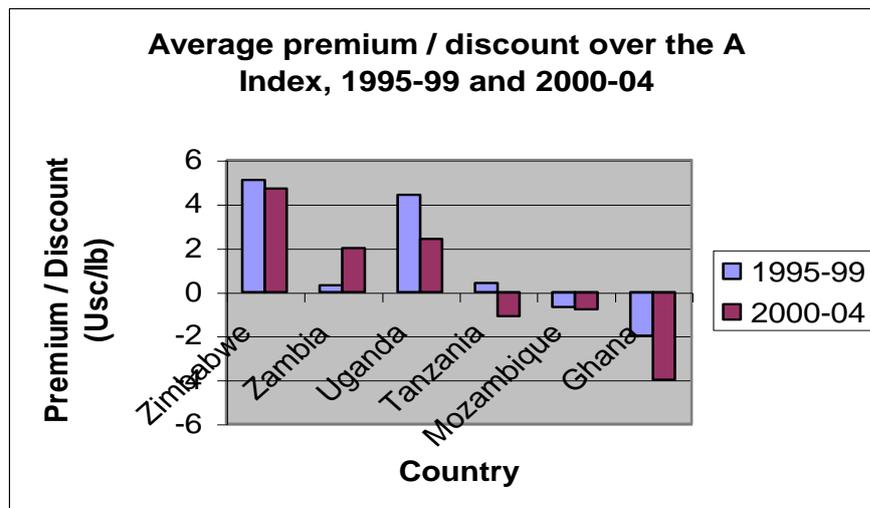
Recent surveys of international buyers have produced mixed findings on the impact of increased competition on the quality of Zimbabwean lint. The buyers' survey conducted by the "Competition and Coordination" project in late 2004 - early 2005, which asked about the average premium or discount given to different African lints over time, found that there was little difference in the average premium over the A index paid for Zimbabwean lint in 1995-99 and 2000-04 (Figure 7). However, one respondent who indicated that the premium received by Zimbabwean lint had fallen by

³⁹ Traditionally in Zimbabwe immature bolls would be classed as grade C.

1c/lb between 1995/99 and 2000/04 commented that the premium in 1995/99 was attributable to “good classing (only three players)”, whereas the lower premium in 2000/04 was attributable to “new players (exporters/ginners)”.

Similarly, Estur 2007 found that the premium paid for the top lint grades from Zimbabwe had only fallen by USc1/lb between the mid-1990s and 2006/07. On the other hand, Estur 2007 also reports that, “PT Apac Inti Corpora classed Zimbabwe cotton in the group of seriously contaminated origins. Based on 2,900 tons inspected in 2004 and 2005, 93 percent of the bales were found to be contaminated, on average 28 grams per ton, including 82 percent of fibrous contaminants. This cotton was likely supplied by newly established ginners.” (p39).⁴⁰

Figure 7: Average premium/discount over the A Index



Source: Larsen and Poulton 2005

Field work conducted in early 2007 provided insights into the extent of the quality control problem currently experienced by the Zimbabwe sector and revealed that, while the premium received by the top lint grades has not fallen much (i.e. classing standards have been maintained), the proportion of lint achieving those top grades has plummeted.

At the Cottco ginnery in Muzarabani, we were told that in 2006 an additional seven people (making 15 in total) had to be employed to sort all seed cotton consignments before they could be sent into the ginnery. These people rejected a total of 12.5 tons of seed cotton that had been contaminated by water, sand or fuel, and sorted out a staggering total of 430kg of polypropylene fibres and 470kg of other foreign matter. In the early 2000s, comparable figures would have been less than one ton of seed cotton rejected (mainly for spoilage during transportation – not adulteration by farmers⁴¹) and negligible polypropylene fibres and other foreign matter.

⁴⁰ A large Indonesian spinning mill, PT Apac Inti Corpora, collected comprehensive data on the nature and the extent of contamination in different origins of cotton, based on the systematic contamination removal from over 200,000 tons of cottons in the last 7 years. The results of the study were presented at the 2006 Bremen Cotton Conference.

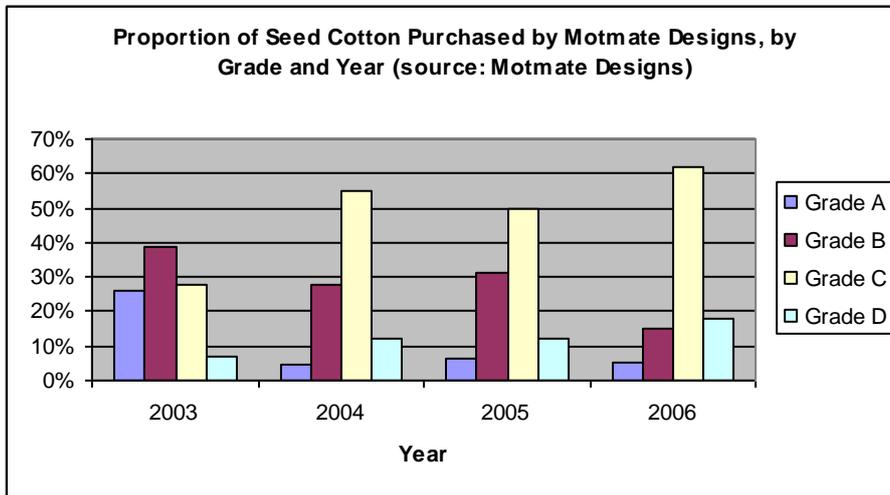
⁴¹ Cottco are believed to be less prone to adulteration problems (water, sand and rocks) than newer companies, because they have a farmer tracing system based on bale numbers and will take the police to any farmer whose bales are found to have been adulterated when they are opened at the ginnery.

The polypropylene problem comes from inadequate distribution of picking bags for producers to collect cotton and of woolpacks for them to transport seed cotton to buying posts. These problems are blamed on newer companies, but Cottco is obviously also buying seed cotton that has been packaged in this way. Signs prohibiting polypropylene are now clearly displayed at the gates and around the compounds of all Cottco ginneries.

Cargill report that, in the mid-1990s, around two thirds of all seed cotton would have received an A or B grade. In turn, all of this would have fed through to lint of the top three grades. In 2006, according to buying slips, 35 percent of Cargill’s seed cotton received an A or B grade, but more rigorous re-grading at the company’s ginneries reduced this figure to less than 1 percent! As a result, even with the use of lint cleaners, only 3 percent of lint achieved the top grade (compared to 20-25 percent in the late 1990s) and less than 50 percent could be sold as one of the top three grades. This figure fell to less than 10 percent for their oldest ginnery, which does not have lint cleaners fitted.

These figures were corroborated at Cottco’s Gokwe ginnery⁴². Figure 8 shows how the seed cotton purchased in recent years was graded at the ginnery. There is a striking one-off fall in the proportion achieving grade A between 2003 (when the figure was 26 percent) and 2004 (when it fell to 5 percent). As 2003 was the year in which flat rate buying was introduced, this shows that farmers adapted to the new incentive system in a single season. Another notable fall in quality (principally affecting the proportion of B grade cotton) occurred in 2006, a year of exceptional price competition between companies. Thus, the share of seed cotton achieving grades A or B has fallen from 65 percent in 2003 to 20 percent in 2006.

Figure 8: Proportion of Seed Cotton Purchased by Motmate Designs



Meanwhile, in the focus group discussion in Mutamburigwa, respondents acknowledged that farmers make much less effort to grade their seed cotton now that they are not rewarded for the extra effort. They reported that, in years gone by, they would harvest using two containers – one for good cotton and one for poor (e.g. insect damaged) cotton. Before sending it to the buying post, they would then further grade the good cotton to try and separate out that which they believed could achieve grade A.

⁴² This has EPZ status, so is officially known as Motmate Designs.

They no longer bother to do this. At the same time, some rural residents with little or no cotton have begun collecting up the scraps of seed cotton that get stuck on bushes or dropped around buying posts – and are able to sell this!

4.7.Pricing of Seed Cotton

In previous sections we have highlighted concerns over credit repayment and quality control arising from the rapid new entry into the Zimbabwe cotton sector starting in 2001/02. However, one area where a more competitive sector would normally be expected to perform better than a concentrated one is in the area of seed cotton pricing.

Table 7 calculates the share of the f.o.b. lint price received by producers in the years immediately prior to, and since, liberalization. According to Baffes 2001 (Table 5.7, p179), the prices paid by Cottco during the early 1990s were unrivalled in Africa. However, the figures reported in Table 7 for the 1992-95 period are considerably lower than those presented in Baffes 2001, albeit still higher than prices in Francophone Africa at the same time.

An immediate positive impact of liberalization was the move to instant cash (or cheque) payments upon weighing and grading of delivered seed cotton, an initiative introduced by Cargill. Prior to liberalization, farmers had to wait for any time between two weeks to several months before they received cheques from the CMB headquarters in Harare.

In the years immediately following liberalization, Cottco exercised informal price leadership within the sector (Hanyani-Mlambo et al. 2002). There were also a number of reasons for Cottco to pay attractive seed cotton prices to producers. These included:

- Awareness that the loss of much of the CMB's commercial farm supply base occurred because of the unattractive prices paid in the late 1980s;
- The need to make cotton attractive to thousands of new smallholder producers;
- The need to keep ahead of new entrants Cargill and Cotpro.

The picture painted by Table 7 is of a sector that paid modest prices in the first couple of seasons after liberalization, when the A Index lint price was high but falling, but which became much more generous in its pricing during 1997-2000. In 1998 there was a significant depreciation in the real exchange rate, which enabled companies to support the seed cotton price (indeed, to raise it in real terms) even though the A Index lint price was now quite low.

Comparing the performance of cotton sectors in Zimbabwe, Zambia, Tanzania and Mozambique in the years 1998-2002, Poulton et al. 2004 concluded that the concentrated sectors (Zimbabwe, Zambia) had performed better than the others in terms of input supply and quality control while at the same time delivering prices to producers that were as attractive or – in the case of Zimbabwe – more attractive than even the highly competitive Tanzanian sector. On the evidence of Table 7, the time period chosen for this comparison was quite fortuitous for the Zimbabwe sector.

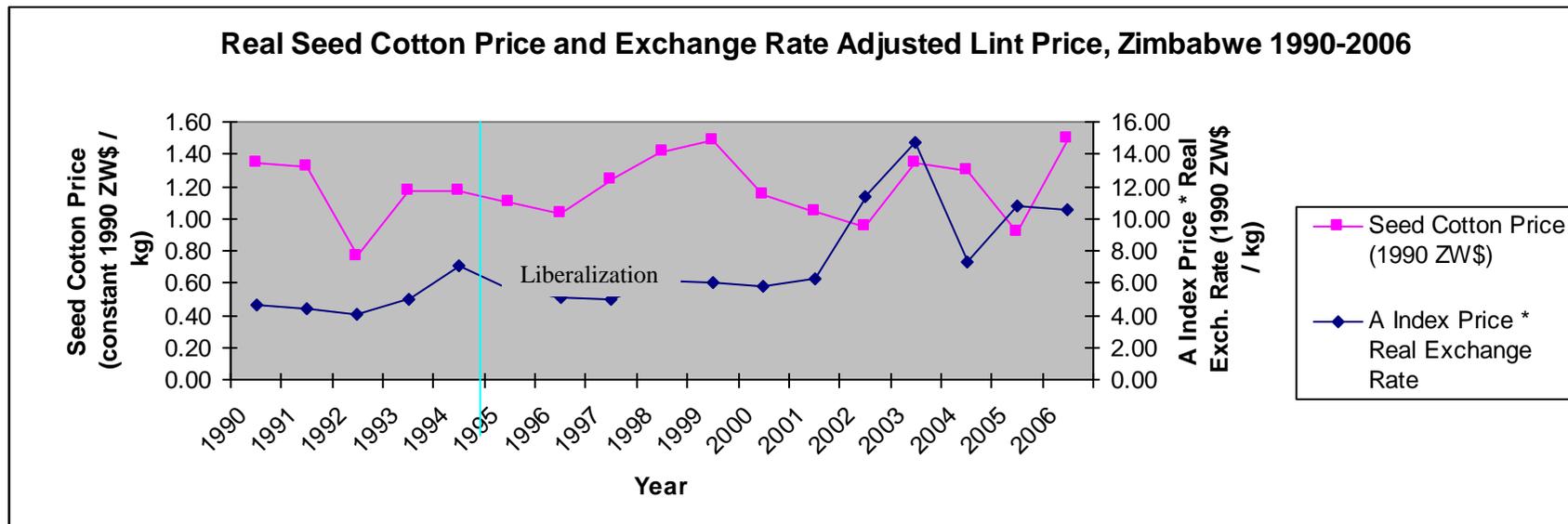
Table 7: Seed Cotton Prices and Producer Shares of c.i.f. Lint Price, 1990-2006

		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Seed Cotton Price	ZW\$ / kg	1.35	1.63	1.35	2.62	3.20	3.70	4.20	6.00	9.00	15.00	18.00	28.00	57.00	400	1800	4500	80000
Seed Cotton Price	US\$ / kg	0.53	0.44	0.26	0.40	0.39	0.43	0.42	0.49	0.37	0.37	0.33	0.21	0.14	0.19	0.29	0.16	0.28
A Index Price + premium	US\$ / kg	2.01	1.53	1.40	1.71	2.28	2.07	1.90	1.75	1.43	1.28	1.38	1.01	1.32	1.62	1.21	1.28	1.32
Ex-ginnery Price (f.o.t.)	US\$ / kg	1.79	1.31	1.18	1.49	2.06	1.85	1.68	1.53	1.21	1.06	1.16	0.79	1.10	1.40	0.99	1.06	1.10
Payment to Producers	US\$ / kg	1.33	1.10	0.65	1.00	0.97	1.07	1.05	1.23	0.93	0.92	0.82	0.52	0.35	0.48	0.73	0.39	0.71
Producer Share of cif/cfr	%	66%	72%	47%	59%	43%	51%	55%	70%	65%	72%	59%	52%	26%	30%	60%	30%	54%
Producer Share of f.o.t.	%	74%	84%	55%	67%	47%	58%	62%	80%	77%	87%	71%	66%	32%	34%	74%	37%	64%

Assumptions: 10% premium over A Index price until 2002, then 2% loss per year since; 10c/lb difference between c.i.f. and f.o.t.; ginning out-turn ratio = 40%

Note: Annual average exchange rate figures are used for 1990-2000, based on Ndlela and Robinson 2007. From 2001, July figures are used, based on information from RBZ and private sources.

Figure 9: Real Seed Cotton Price and Exchange Rate Adjusted Lint Price, Zimbabwe 1990-2006



The pricing performance of the Zimbabwe sector changed dramatically again after 2001 when economic and political crisis began to wreak havoc with the real exchange rate. The declaration of the fast-track land redistribution program was disastrous for Zimbabwe's foreign exchange receipts, both because foreign investment dried up and because the tobacco sector, one of the main earners of foreign exchange, was particularly affected by land invasions. Thus, while the official exchange rate remained pegged, a major parallel foreign exchange market opened up, which cotton companies could deal in, at least in part. Foreign exchange shortages did, of course, eventually feed through into domestic inflation, but only with a lag. Thus, during 2001 and 2002 there was a massive depreciation of the effective real exchange rate facing cotton companies (Figure 2).

Figure 9 shows the effect of the real exchange rate movements on the ability of Zimbabwe's cotton companies to pay for seed cotton. A multiple of the A Index international lint price and the real exchange rate expressed in 1990 terms is used as a proxy for this. In 2002 movements in the real exchange rate totally eclipsed the fall in the A Index lint price that occurred in this year as a determinant of companies' ability to pay for seed cotton. Figure 9 also shows the prices that Zimbabwean cotton companies actually paid their producers, expressed in constant 1990 Z\$. This highlights the fact that, while companies' ability to pay for seed cotton dramatically increased during 2002, seed cotton prices tracked the A Index downwards.

As a result, Cottco recorded large increases in profits in 2002⁴³, which clearly signalled the attractiveness of the sector to other firms and encouraged the new entry recorded in Table 2. Thanks to the continuing depreciation in the real exchange rate, further large profits were recorded in 2003, despite the increase in the real seed cotton price paid to producers.

One can only speculate as to why Cottco and Cargill set the prices that they did during this period. Admittedly, predicting sensible prices in advance is extremely difficult during turbulent economic times. However, both companies had continued the practice pursued by the CMB of making two payments to producers: the first at the time of seed cotton marketing and the second at the end of the calendar year, once most lint had been sold and the financial performance of the company during the past production and marketing seasons could be assessed. Thus, modest payments at the time of seed cotton marketing could have been boosted by more generous second payments. Instead, profits were largely retained⁴⁴. With hindsight, these decisions may appear short-sighted.

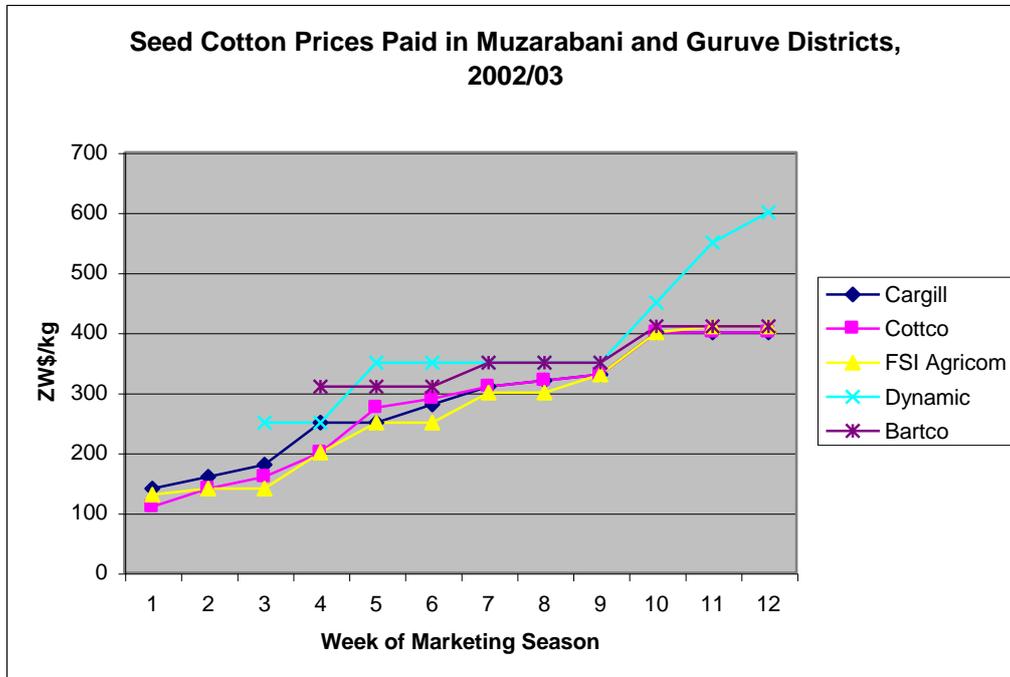
During the 2002 buying season, the new entrants into the sector generally set their seed cotton prices higher than those offered by Cottco and Cargill. Thus, Farmers' World offered prices around ZW\$50 per kg, whereas Cottco and Cargill opened at ZW\$28-38 per kg. Following their second payments at the end of the year, Cottco and Cargill farmers actually received a total of ZW\$56 per kg. This was more in nominal terms than was received by farmers who sold to Farmers' World, although one should also consider the effects of several months' hyper-inflation on the value of the second payments given by Cottco and Cargill. However, it was still considerably less than the

⁴³ <http://www.fingaz.co.zw/fingaz/2003/June/June12/4102.shtml> provides an example of media reporting these profits.

⁴⁴ Cottco moved into Mozambique during this period, so these "windfall" profits may have partly funded this.

ZW\$70 per kg paid up-front by Dynamic Cotton (Hanyani-Mlambo et al. 2003). The attitude of the established firms appeared to be that the limited capital of the new entrants would limit their ability to capture market share, despite the attractive prices that they were paying.

Figure 10: Seed Cotton Prices Paid in Muzarabani and Guruve Districts



Source: Hanyani-Mlambo and Poulton 2004

Figure 10 shows a similar picture for the 2003 buying season. Again, the established firms did not attempt to fully match the prices offered by their newer competitors⁴⁵. It is, therefore, debatable how far the new entry in 2002 and 2003 actually forced up the prices paid by established companies. What the price discrepancies between established and new companies did do was to stir up farmer dissatisfaction with the prices paid by the established companies.

In 2004 Cottco and Cargill offered prices of Z\$1800 per kg soon after the marketing season commenced. However, encouraged by the Zimbabwe Farmers' Union, many farmers initially refused to sell their seed cotton at this price, claiming that it would be insufficient to recoup their costs for seed, fertiliser and pesticide. Smaller companies had initially offered prices in the range ZW\$2100-2500 per kg, but then proved unable to buy at these prices as the real exchange rate appreciated again almost as fast as it had depreciated during 2002-03 (Figures 2 and 9). For the first time since liberalization, the government (in the form of the Ministry of Agriculture) was drawn into deliberations about the seed cotton price. At meetings at the Ministry in July 2004, a price of Z\$1900 per kg was agreed for outstanding seed cotton purchases. However, by the time that this

⁴⁵ By this time, even more so than in 2002, foreign exchange transactions were becoming a sensitive subject. Cottco argues that, as a large and highly visible public company, they were subject to closer scrutiny by the government over their foreign exchange transactions than their smaller competitors. Similarly, Cargill have an international brand image to protect. Hence, neither could obtain the same effective exchange rate as smaller competitors, which limited their ability to pay the same seed cotton prices.

agreement was reached, most seed cotton had already been bought at the original price of Z\$1800 per kg. As Table 7 shows, even at Z\$1800 per kg pricing in 2004 was reasonably generous by the standards of most African cotton sectors.

In 2005 the seed cotton price was constrained by the exchange rate that the companies could access their foreign currency at. Much of the price (ZW\$3500 out of Z\$4500 per kg) was paid in the form of a subsidy from RBZ. Nevertheless, the price was in no way generous.

In 2006 the target price suggested by companies at the NCC pricing committee (ZW\$28,000 per kg) was far from generous and negotiations were inconclusive. At the start of seed cotton buying in April-May, farmers were given an initial payment of ZW\$5 million per bale, as a suitable price had not been agreed. Cottco then announced prices around ZW\$25,000 per kg, with other companies opening up to 30 percent higher than this. However, fierce price competition soon kicked in, taking Cottco's closing price to ZW\$105,000 per kg at the beginning of August (a tripling of the price in real terms), with some of the smaller companies closing as high as ZW\$145,000 per kg.

Discussions with ginnery managers in Muzarabani and Gokwe South indicated that farmers who could afford to hold onto their seed cotton resisted selling at the season's opening price. Farmers who did sell early received a subsequent payment (the real value of which was greatly reduced by inflation) to bring their nominal payment to ZW\$50,000 per kg⁴⁶. However, Cottco purchased much of its seed cotton at around ZW\$85,000 per kg in late June and July. As Table 7 shows, prices in 2006 were not particularly generous, but they were not as low as in some recent seasons.

The foregoing discussion shows that the seed cotton pricing performance of the Zimbabwe sector has varied considerably from period to period. Table 8 attempts to summarise this performance.

Table 8: Assessing Seed Cotton Pricing within the Post-Liberalization Zimbabwe Cotton Sector

	Pre-Liberalization		Post-Liberalization		Tanzania
	<i>1980-1994</i>	<i>1995-2000</i>	<i>2001-2006</i>	<i>1995-2006</i>	<i>1995-2006</i>
Share of f.o.t.	74%	72%	51%	62%	68%
Share of c.i.f.	65%	62%	42%	52%	59%

Note: Figures are simple averages of the shares calculated for each year within the period.

Contrary to most African experience, Table 8 shows that seed cotton pricing was most generous in the pre-liberalization period – possibly a result of the continued (albeit declining) lobbying power of commercial growers during these years (Jenkins 1997). Seed cotton prices accounted for a similar share of lint prices in the immediate post-liberalization years, but have declined as a share of the lint price since 2001. There are two possible explanations for the fact that producer price shares have remained lower despite increased competition in recent seasons:

- There have been unavoidable increases in company costs as a result of economic crisis. While we would expect this to some degree, our analysis of

⁴⁶ Motmate Designs in Gokwe made these supplementary payments on 30% of their total seed cotton purchases in 2006.

company costs (section 5.1) finds at best limited support for this. Instead, there are costs that appear to be lowered in US dollar terms by distortions in the current Zimbabwe economy.

- The entry of numerous, but mostly small, new firms has had only limited impact in raising seed cotton prices. This is the corollary of our assessment that it is the huge depreciation in the real exchange (Table 2), little of which has been passed onto producers, that explains the falling producer share of lint value since 2001. We do not deny that increased competition has made a difference to prices on some occasions, for example towards the end of the 2006 buying season, when there was something of a scramble for the final available seed cotton. However, new firms would have to be larger and financially stronger than they are now to raise the average seed cotton price received by producers season by season.

By contrast, we note that the even more competitive Tanzanian sector, where there are no dominant firms, has performed better than the Zimbabwe sector on seed cotton pricing over their (shared) post-liberalization period (Table 8). However, the share of the lint price received by Tanzanian producers over this period is actually below that received by Zimbabwean producers in both the pre-liberalization and immediate post-liberalization years. Comparative seed cotton prices are explored further in the accompanying synthesis report to this project.

5. Cost Competitiveness, Returns to Producers and Sustainability

This section relies heavily on two sets of budgets, calculated during fieldwork in early 2007:

- An illustrative ginner's budget, that attempts to summarise the costs incurred by a medium-sized ginnery in assembling and ginning seed cotton in 2006;
- Illustrative budgets for seed cotton production by each of the three farmer types identified during focus group discussions.

5.1. Processing and Marketing Costs in Zimbabwe

Our illustrative ginnery budget is presented in Appendix Table 1. This is compiled from a range of information sources and so does not reflect the costs at any specific ginnery. Given the instability in the Zimbabwe economy - in particular, the volatility of both domestic prices and foreign exchange rates - we emphasise that such figures should be interpreted with some caution.

Local currency costs are converted into US dollars using an effective exchange rate, i.e. weighted average of official and parallel exchange rates, that varies by month. The official rates have been obtained from RBZ. The parallel rates are the mean of two series obtained from independent sources⁴⁷. The monthly exchange rates used are presented in Appendix Table 5.

⁴⁷ Over the period January 2006 to February 2007, the means of the monthly values in the two series are equal. However, one series recorded higher values than the other (ratio = 1.2-1.4) during the critical months of May-July 2006. Choice of exchange rate during these months influences both one's assessment of the 2006 seed cotton price and the total estimated export costs of Zimbabwean lint.

Assumptions underlying the budget are presented in Appendix Table 1 panels A-B. Attention is drawn to the unusual financing costs and also to the very low prices for electricity, which reflect the fact that ZESA prices are controlled by the government and appear to be based on the official exchange rate. In a later section, we show the extent to which the ability to access some cheap finance was important for company profitability in 2006 (Table 10).

Comparison with ginning costs in other African countries suggests that, in US dollar terms, ginning in Zimbabwe is currently very low cost. This should not come as a surprise, however, given the major depreciation of the real exchange rate that has taken place in recent years (Figure 2).

Attractive prices for cottonseed, a result of the deficit situation in the oil sector that was described in section 3.7, more than offset ginning costs. Note, however, that the toll ginning rates charged to companies without their own ginneries – 8-10c per kg of seed cotton – were almost double the revenue from the resulting seed sales.

Comparison of the ex-ginnery f.o.t. cost with the lint price paid by the domestic textile industry suggests that the ginnery would just about have broken even on the 30 percent of lint sales that it was required to sell locally. However, given the level of uncertainty over the figures, it is possible that some ginneries made a loss on these sales.

Meanwhile, the c.f.r. (Far East) cost is comfortably under the A index price (even without premium), so overall the ginnery would have made a profit on its operations. This may shed some light on the continued entry into the Zimbabwean cotton sector (Table 2) despite the wider economic difficulties.

Overall, this analysis suggests that, despite the practical difficulties of operating in a highly distorted and dysfunctional economy, and even with the strong competition for seed cotton in 2006, the Zimbabwe cotton sector remains cost competitive on the international market. The main reason for this is the depreciation of the real exchange rate that has taken place in recent years. However, some additional distortions, such as artificially low electricity prices and loans at negative real interest rates from commercial banks, also help keep costs down.

5.2. Cost Competitiveness at Farm Level

Farmer production budgets for each of the farmer types identified by the focus groups are presented in Appendix Tables 2-4. Separate budgets were prepared for Muzarabani and Gokwe South, but there were no notable differences in the principal outcome indicators. Therefore, just the Gokwe South budgets are presented here. We note that these budgets assume higher seed cotton yields than are compatible with national average data and also larger areas planted to cotton than are compatible with the 2002 and 2004 farmer surveys (section 3.3). Thus, they should perhaps be thought of as “best case” budgets.

Attention is drawn to the seed cotton prices received by the different groups of farmers. In line with information provided during the focus group discussions, all groups are assumed to make some early sales of seed cotton either because of pressing cash needs or to begin loan repayment. However, it is the poorest group (group 3) who sell the

highest proportion of their harvest at these opening prices. They, therefore, receive an average price for their seed cotton that is well below the sector average price quoted in Table 7. This reinforces the effect of low yields on the profitability of their cotton production activities. According to the focus groups, it is only the top group who are able to retain any of their seed cotton until the very end of the buying season when prices are (normally) highest. Thus, they receive an average price for their seed cotton that is above the sector average price quoted in Table 7. This reinforces the effect of high yields on the profitability of their cotton production activities.

Table 9: Analysis of Costs and Returns from Farmer Budgets (US\$)

Group 1	Fertilised	With Manure	Overall
	<i>per acre</i>	<i>per acre</i>	<i>whole farm</i>
Gross Revenue	218.39	124.79	3431.82
Margin After Payment of Inputs	123.65	94.61	2182.53
Input Cost / Gross Revenue	0.43	0.27	0.36
Gross Margin (excl family labour)	84.42	60.64	1450.54
Returns to family labour	6.3	5.5	5.9
Net Margin (after family labour)	70.94	49.61	1205.54
Cost per kg	0.21	0.19	0.20
Household Size	8		
Income per capita	181.32	PPP US\$	736.05
Group 2	per acre		
Gross Revenue	91.26		
Margin After Payment of Inputs	55.23		
Input Cost / Gross Revenue	0.39		
Gross Margin (excl family labour)	30.39		
Returns to family labour	2.0		
Net Margin (after family labour)	14.82		
Cost per kg	0.24		
Household Size	5		
Income per capita	45.59	PPP US\$	185.07
Group 3	per acre		
Gross Revenue	58.03		
Margin After Payment of Inputs	38.60		
Input Cost / Gross Revenue	0.33		
Gross Margin (excl family labour)	38.60		
Returns to family labour	0.9		
Net Margin (after family labour)	-3.85		
Cost per kg	0.26		
Household Size	3		
Income per capita	25.74	PPP US\$	104.47

Source: focus group discussions

Table 9 presents a number of indicators of costs and returns that can be derived from these budgets. The “gross margin (excluding family labour)” is derived by deducting the value of hired labour and services (e.g. ploughing or transportation) from the “margin after payment of inputs”. The “net margin (after family labour)” is derived by deducting an imputed value of family labour – taken as US\$1 per adult per day – from

the “gross margin (excluding family labour)”. The conversion factor for the PPP US\$ income figures is given in Appendix Table 6.

From Table 9, we note that:

- Costs of production per kg of seed cotton are lowest for the most productive group and highest for the lowest producers. This is in line with what is found in the other country studies.
- A third or more of farmers’ gross revenue from cotton is accounted for by input costs. This figure rises with the intensity of production, but the ratio is a third even for the smallest producers. This implies a considerable degree of risk.

5.3. Return to Farmers and Poverty Alleviation Considerations

Minot and Daniels 2002 explored the impact of international (US and EU) cotton subsidies on poverty in rural Benin, given their effect of lowering the seed cotton price that companies in Benin could afford to pay to producers. They estimated, using nationwide household survey data, that a 40 percent decline in the farm-gate price of seed cotton led directly to an additional 6-8 percent of rural households falling below their chosen poverty line. Overall, they concluded that, “... there is a strong link between cotton prices and rural welfare in Benin. ... to the extent that fluctuations in world cotton prices are transmitted to farmers, they will have a significant effect on rural incomes and poverty.” (p50-51).

Using programming models for representative household types to explore similar questions for the case of Zimbabwe in 2002, Poulton 2005 estimated that a 40 percent increase in the seed cotton price would have reduced the proportion of households within the relevant population (i.e. the cotton growing areas of the country) that lived below the local poverty line from 55 percent to 42 percent. This shows the importance of cotton production to regional, if not national, poverty reduction. We note here that, according to the evidence presented in this report, changes in outcomes for farmers of this sort of magnitude can occur as a result of changes in internal, sectoral policy – not just changes in the external environment.

Table 9 provides insights into the well-being status of different types of cotton households and how they might be affected by changes in the performance and efficiency of the Zimbabwe cotton sector. From this table, we observe the following:

- Returns to labour are attractive for group 1 households, where household labour is essentially a managerial input supervising hired labour. As already noted, these households benefit both from the highest seed cotton yields and the highest average seed cotton price.
- By contrast, the returns to labour achieved by the smallest producers are fractionally below what would be obtained from hiring out labour to others. During times of peak labour demand, these households prioritise the hiring out of their labour (to group 1 and group 2 households), fitting labour input onto their own cotton plots into spare hours in the later afternoon or on days when they have been unable to hire their labour out. As a result, key tasks such as weeding tend to be done either late or in a very cursory manner, to the detriment of eventual yields.

- When converted into purchasing power parity dollars, the income per capita from cotton production (net of input costs, but excluding the cost of family labour) for group 1 households makes them clearly non-poor in MDG terms.
- The income that group 2 households obtain from cotton is substantially less than one dollar per household member per day. However, these households “only” devote about half of their cultivated land to cotton (Table 1) and do have small quantities of livestock, although it was reported in focus groups that few have access to income from wages, business or remittances. It is likely that these households are distributed around the international poverty line, so changes in sectoral policy could have a big impact on their “dollar a day” poverty status.
- Group 3 households are clearly poor in MDG terms. Cotton production plays an important part in their current livelihood strategies, but multiple asset and cash constraints limit the extent to which they can respond to better prices - or even services - in the short term⁴⁸. Thus, taking a comparative statics approach, most are likely to remain poor under any plausible scenario of enhanced cotton sector performance. On the other hand, there is a strong lifecycle effect in the well-being of group 3 and 4 households, the majority of whom are either young or elderly. For young households, the direct but dynamic benefits of enhanced cotton sector performance would come in the form of increased ability (at the margin) to save and invest in assets (such as livestock and ploughing equipment) that over time would permit them to climb out of poverty. For elderly households, direct income support is likely to be a better approach to enhancing well-being than changes in productive sectors.

As well as enhancing the incomes of those producing cotton on their own account, improved cotton sector performance should raise demand for hired labour in cotton producing zones. The farmer budgets indicate that group 1 households hire in considerably more labour than they apply themselves to their cotton plots, while group 2 households are also regular hirers of labour (although some household members may also hire labour out). Young group 3 households are likely to experience useful indirect benefits of enhanced cotton sector performance in the form of increased demand for their labour. As their returns to labour on the own cotton plots will simultaneously be raised, this increased demand for labour is very likely to translate into higher wages for casual agricultural labour⁴⁹. Focus group participants in Zharare (Gokwe South) also

⁴⁸ Lack of draft power means that they tend to plant late, which reduces their potential yield right from the outset of the season. While access to more inputs would raise their expected yields above current levels, cash flow problems that force them to hire their labour out at key times would reduce the returns that they could obtain from these additional inputs.

⁴⁹ In focus group discussions in Muzarabani, respondents make several references to increased labour costs and shortages over the past few years. This may be related to the land resettlement programme, through which people from the area have been given land on former commercial farms, but respondents also noted that group 1 households had been expanding their cotton production (as a response to falling returns in a situation where there were few alternative income earning opportunities) and hence demanding more labour. Farmers in Muzarabani are currently rather agitated about the regulation that requires them to clear their land of old cotton plants by August 15th each year. While vital to national efforts to control pink bollworm (Mariga 1994), they complain that the statutory date enables hired labourers to demand whatever wages they wish, as so many farmers are looking to hire labour at the same time.

noted that, at harvest time, labourers come from the neighbouring district of Binga to gain employment through cotton picking.

Both Minot and Daniels 2002 and Poulton 2005 highlight the fact that the extent to which farm households switch in and out of cotton production is critical to the impact of changes in sector performance on household well-being. Perhaps counter-intuitively, the more readily households switch in and out of cotton production, the smaller the impact on household well-being of a given change in cotton production. The focus group discussions in Muzarabani and Gokwe South indicated that farm households have relatively few alternative income earning opportunities outside cotton (the shares of cultivated land dedicated to cotton, that are reported in Table 1, illustrate this well). Maize is the second most important crop in all cases, followed by groundnuts and sometimes small grains.

Muzarabani is, in an ideal world, too hot and dry for maize. Thus most households – even group 1 households – are deficit in maize, relying on cotton income for maize purchase. The Muzarabani focus groups reported that some fertilizer intended for cotton (an estimate of 25 percent was given by one group) gets diverted to maize production to try to reduce the deficit. In Muzarabani, groundnut production has been increasing in recent years, although it remains distant second to cotton as a cash crop. Informal traders come to the area during the groundnut harvest, ultimately taking the (shelled) final product to markets as far away as Botswana. In the past, the unreliability of the market has been a constraint on groundnut production, but a virtuous circle may now be beginning to develop, whereby increased production and increased number and predictability of visiting traders reinforce each other. Cattle are relatively plentiful in Muzarabani, although ownership is concentrated within group 1 households, with some group 2 and older group 3 and 4 households also owning cattle. For all except those with the largest herds, cattle sales are in response to particular cash needs (including farm input purchase), rather than a regular income stream.

Land in Gokwe is divided into two main soil types: highly fertile black vertisols and more sandy soils. The presence of the former means that many households in groups 1 and 2 are net maize sellers in an average year, while perhaps half of group 3 households hope to attain maize self-sufficiency. This more secure food situation means that, when the Grain Marketing Board (GMB) distributes subsidized fertilizer for maize production (mainly to the larger and better connected producers, apparently), some of this is likely to be diverted to cotton production⁵⁰. Cotton fertilizer is not diverted onto maize.

Poulton 2005 found that larger cotton producers, with good access to inputs for cotton production on credit, were less likely to switch into and out of cotton production in response to short-term changes in sectoral performance than smaller producers, whose incentive to produce cotton was heavily dependent on the seed cotton price. Anecdotal support for this was provided by the focus group in Mutamburigwa (Gokwe), which noted that, amongst group 3 households, occasional non-growing of cotton is not uncommon. However, no household will ever go three seasons without growing cotton, because it is the only cash crop of note in the village.

⁵⁰ GMB also buys at low, controlled prices, which discourages net sellers from investing in extra maize production.

These observations support the view that improvements in the efficiency and performance of the cotton sector will have significant welfare benefits in the main cotton growing zones of Zimbabwe, although the direct benefits are most likely to be captured by group 1 and group 2 households.

Finally, while it is impossible to gain any reliable information on trends through a brief visit, the growth of the Gokwe “growth point” over the past decade is an impressive testimony to the multiplier effects of an expanding cotton industry. The town boasts numerous new businesses, including two medium-sized Spar supermarkets, and plenty of ongoing residential construction, including houses being built in town by cotton farmers from surrounding villages investing the proceeds of their cotton production.

We are less clear about the medium-term trend in Muzarabani, but observe that there has been little visible development here since we commenced survey work in 2002. Indeed, some businesses have closed since 2004, reflecting the difficult overall economic climate, but also that cotton production in the area has not been sufficiently vibrant to offset this.

5.4.Sector Sustainability

As with the national economy more generally, the cotton sector in Zimbabwe has been going through challenging and uncertain times recently. However, as emphasized in this report, the challenges facing Zimbabwe cotton are not simply those of navigating through the more general economic crisis. Rather, they concern the sector’s response to its own changed structure and dynamics. Specifically, can it develop a regulatory framework appropriate to the new, more competitive market for seed cotton? The answer to this question will determine whether it can respond to more specific issues of sustainability within the sector.

At the farm production level, many group 1 and some group 2 households have been using inorganic fertilizer on their cotton for years. Use of manure directly on cotton plots is less common than application of inorganic fertilizer, but this is slightly misleading. According to the 2004 household survey, only 15 percent of cotton producing households applied manure on their cotton plots in 2004 (Hanyani-Mlambo et al. 2005). Appendix Tables 2-4 indicate that it is mainly group 1 households that apply manure, this being related to ownership of cattle and hence access to manure (as it is only possible to buy manure in one of the four villages where focus group meetings were held). However, focus group participants explained that extension advice has traditionally been that manure should be applied onto a maize plot, with cotton grown on that plot the following year as part of a rotation. Many group 1 and group 2 households (and older group 3 households that have cattle) do this.

It also appears that group 1 households are increasing their manure application directly onto cotton plots. This may be a response to decreasing availability, and increasing cost, of inorganic fertilizer. Manure availability was raised as the major constraint on households’ ability to increase manure application. In Muzarabani, respondents stated that livestock sales to meet pressing cash needs in the difficult economic environment, plus periodic droughts, had prevented an increase in cattle numbers, hence constraining manure use.

When focus group participants were asked about trends in seed cotton yields in their areas, the responses were mixed. Some claimed that yields were falling, but either cited factors beyond their control (e.g. deteriorating rainfall patterns) or short-term problems linked to national fertilizer scarcity. In Zharare (Gokwe), by contrast, respondents were upbeat about their ability to manage their soils (this was the only village of the four where some households are still able to fallow land) and claimed that the yield trend was upwards.

While the insights gained from focus group discussions are at best only indicative, the anecdotal evidence presented here does not suggest that soil fertility constraints are about to undermine the profitability of cotton production in Zimbabwe's main smallholder cotton production zones. However, institutional arrangements to enable cotton companies to support inorganic fertilizer use by cotton producers have come under strain recently and are still a topic of considerable debate within the sector. We return to this in section 6.

A similar comment applies to the institutional arrangements supporting quality control within the sector. The newer companies are accused by established players of embarking on the "Tanzanization" of the Zimbabwe cotton sector, i.e. moving it towards a lower cost, but lower yielding and lower quality, position within global markets. There would almost certainly still be a market for such cotton, so in that sense it would not mean the demise of the sector. However, it would be disastrous for both Cottco and Cargill; the former because its business is built on the production of high quality cotton and its overhead costs undoubtedly reflect that, the latter because the attraction of Zimbabwe within its global portfolio of cotton assets is as a complement to (or, if necessary, substitute for) high quality Australian lint. Cargill can readily source low quality cotton from elsewhere.

Whether a higher yielding and higher quality model or a lower cost, but lower yielding and lower quality, model is better for Zimbabwe as a whole is an interesting question. Using the 2002 household survey data within a household modeling approach, Poulton 2005 compared production and livelihood outcomes for seven Zimbabwean household types in Muzarabani and Gokwe South from two scenarios:

- The actual set of cotton prices and services observed in 2002, and
- A hypothetical alternative scenario under which competition bid the seed cotton price up by 40 percent, but undermined credit recovery – and hence credit provision – within the sector. (Recall that only the top 40 percent of households had access to credit in 2002).

These simulations suggested that poverty rates across the two areas would be almost identical under the two scenarios, as low-middling households lost nothing from the disappearance of credit provision, but gained from higher prices, while larger households were unable to sustain previous levels of cotton production without the access to company credit, despite the higher prices received. Strikingly, however, cotton production halved under the second scenario, with the decline not compensated for by increases in other crops. This suggests that the former scenario is more desirable from a national perspective. It may also be more desirable from a poverty reduction perspective once various multiplier effects are taken into consideration. Unlike in Tanzania, where there is still plenty of room for cotton production expansion, even

under a fairly extensive production model, it is unlikely that the communal areas of Zimbabwe could sustain current cotton production levels under a less intensive mode of production. (See section 3.2 for a discussion of resettlement and cotton production).

Finally, the performance of the research system was considered in section 4.3. Improved cotton varieties are still being developed in Zimbabwe and other complementary research is being undertaken. However, there are important decisions looming regarding the future organization of the cotton research system.

6. Competition vs Coordination

In this section we do two things. Firstly, we use the ginnery budget that was introduced in section 5.2 to investigate why companies that achieve higher premia for their lint on the international market are nevertheless still unable to match the seed cotton prices offered by “lower cost, lower quality” firms. This provides important insights into the sustainability of the higher yielding and higher quality model, discussed in the previous section, and into the policy distortions affecting competition within the cotton sector. We then discuss the NACGMB’s proposals for managing seed cotton buying in 2007 in the light of our focus group discussions and our analysis so far in this report.

6.1. Quality Premia, Input Support and Other Determinants of the Ability to Pay for Seed Cotton

Taking the ginnery budget presented in Appendix Table 1 as a starting point, we can explore the impact that various changes to policy or to company practice have on a company’s profitability and/or on the seed cotton price that it can afford to pay. Six such simulations are reported in Table 10.

For each scenario, three outcome indicators are reported:

- The profit achieved per kg of lint produced, assuming the seed cotton prices paid to producers remain unchanged from those reported at the bottom of Appendix Table 1 panel A. This is a weighted figure, given that, in most scenarios, 30 percent of lint has to be sold at a subsidized price on the domestic market;
- The mean seed cotton price that could be paid to farmers, holding profit per kg of lint constant at its base level;
- The mean price at which later (i.e. July) seed cotton price purchases could be made (to give the afore-mentioned average), assuming that the prices for the first 60 percent of purchases in May and June remain unchanged from those given in Appendix Table 1 panel A.

Table 10: The Impact of Selected Policy Changes on Company Profitability and Ability to Pay for Seed Cotton

Scenario	Retaining Same Profit Level		
	Profit per kg of lint (US\$)	Mean Seed Cotton Price Payable (US\$/kg)	Mean July Seed Cotton Price (Z\$/kg)
0 Base	0.19	0.28	91250
1 No domestic financing	0.12	0.25	72500
2 No pre-harvest support	0.33	0.34	136250
3 Loan Default = 80%	0.15	0.26	81500
4 100% forex retention	0.27	(0.26)	122500
5 No domestic lint sale	0.26	0.31	115000
6 Pre-2001 Seed Cotton Quality Levels	0.23	0.29	102500

Scenario 1 is a sensitivity analysis considering the impact on company costs of not being able to access financing from local commercial banks, which, as was pointed out earlier, carried a negative real interest rate in 2006. This would have had a large, negative impact on company profitability in 2006 and/or would have reduced the mean seed cotton price that could have been paid by 10 percent.

Scenario 2 is at the heart of current debates about governance of Zimbabwe's cotton sector. It shows the competitive advantage that can be gained by a firm that does not support pre-harvest cotton production activities, but simply enters the market to buy at harvest time, free-riding on the promotional efforts of others. (The calculation is obtained by setting the first five rows of Appendix Table 1 panel D to zero). Scenario 2 suggests that, other things being equal, a firm that does not provide pre-harvest support to cotton producers can pay a 21 percent higher average seed cotton price than a company that does. Clearly, the playing field is not equal where not all firms provide pre-harvest support.

Scenario 3 shows the impact on company profitability and ability to pay for seed cotton of a fall in the rate of recovery of pre-harvest loans. We simulate a fall to 80 percent, but actually suspect that some newer companies have never yet achieved this rate. For an established company that would have expected to achieve loan recovery of 90 percent or more before the increase in competition within the sector, the fall reduces total profits by over 20 percent.

Scenario 4 is equally pertinent to current debates about governance of the Zimbabwe cotton sector. It shows the extent to which firms that can retain 100 percent of their foreign exchange earnings have a competitive advantage over firms that have to surrender 30 percent to RBZ at the official exchange rate. We calculate this by using the parallel exchange rate, rather than the effective rate, for all foreign currency conversions within the budget spreadsheet. This means that the cost of tradable inputs rises (in local currency terms) in the same proportion that the value of output does. However, the cost of domestically sourced inputs that are paid for in local currency falls relative to the value of output. This change has an impact on profitability and on the ability to pay for seed cotton that is second only to the non-provision of pre-harvest services. While the average seed cotton price appears to fall, if expressed in US\$ terms, this is only because this scenario uses a different exchange rate.

Scenario 5 investigates the impact of not having to sell lint at a subsidized price to the domestic textile industry. This increases profitability and the ability to pay for seed cotton by almost as much as 100 percent retention of foreign exchange earnings.

Finally, scenario 6 investigates the benefits that would be obtained by returning to a lint quality profile similar to the one that the established companies enjoyed prior to 2002. Specifically, in Appendix Table 1 panel C we set the share of lint receiving each of the first three premia to 0.3 and the share of lint not receiving a premium to 0.1. We also make small reductions in costs to allow for reduced staff costs in pre-sorting seed cotton at the ginnery and reduce wastage to 0.3 percent. However, we have not included savings in investment in lint cleaners. The significant finding from this scenario is that the impact on profitability and on ability to pay for seed cotton is lower than under any of scenarios 2, 4 or 5. Thus, firms wishing to pursue a high quality lint strategy would be unable to reward producers sufficiently for maintaining high quality standards when confronted by competition from companies pursuing a low quality strategy but either not providing pre-harvest support services, avoiding domestic lint sales or benefiting from 100 percent forex retention⁵¹.

The clear conclusion from these simulations is that, if Zimbabwe policy makers wish the national cotton industry to maintain its historic “high yielding and high quality” profile, then some degree of regulation will be necessary to enforce this. Otherwise, such a strategy, if pursued privately by individual companies but not adopted by the sector as a whole, will be non-viable, as companies free-riding on the input provision efforts of others will be able to pay more for seed cotton than firms engaged in input provision, even if the latter obtain higher price premia on international markets than the former. Such a strategy will be further undermined by the persistence of loopholes, such as 100 percent forex retention for some firms and not others, that mean that the playing field for seed cotton purchase is not level.

6.2. Proposed Arrangements for the 2007 Harvest

If Zimbabwe policy makers wish the national cotton industry to maintain its historic “high yielding and high quality” profile, then some degree of regulation will be necessary to enforce this. However, there is still room for debate on the nature of regulation that might be appropriate or desirable.

By the time this report is presented to sector stakeholders, the success or otherwise of measures taken to govern seed cotton buying in 2007 will already be known. By contrast, these remarks are being written in advance of the 2007 harvest, so are unavoidably somewhat speculative. We will, therefore, keep them brief.

Our understanding of what NACGMB is proposing for seed cotton buying in 2007 is as follows:

- By April 2007 all companies will have submitted to NACGMB evidence of the number of farmers that they have supported with pre-harvest services during the 2006/07 season and the extent to which they have supported them;

⁵¹ This is even without taking into account the consequences of lower capacity utilization that could result from adopting a tougher line on quality control.

- On this basis, they will be assigned fairly tightly specified shares of the total harvest that they can buy in 2007;
- A common seed cotton price will be agreed through the pricing committee, in collaboration with representatives of the farmers' unions.

Assuming this is correct, it represents a major swing of the pendulum away from the competition that prevailed in 2006 and towards coordination. In key informant interviews, we have heard the argument that such a swing of the pendulum is necessary to restore some order within the Zimbabwe sector – even if the pendulum then has to swing part of the way back later to reintroduce competition in seed cotton pricing. However, would the regime set out above be a swing too far?

We raise the following concerns:

- The first is a very practical one, derived from the observation that companies have provided radically different levels of support to their farmers (Table 6). If all companies provided equal packages to all farmers, then allocation of market shares would be easy. However, it is less obvious how one weighs the impact on production of provision of seeds and limited chemicals on the one hand and a full input package on the other. Such calculations are further complicated by the fact that the established companies have their own competitive advantage, derived from years of operating in the sector: they know, and have built relationships with, the most productive farmers.
- A second practical concern is that an approach that divides the market up too rigidly based on provision of inputs on credit actually discourages the cash sale of inputs by companies at harvest time. (This creates “free” farmers, who are a problem for a tightly regulated system!). However, focus group participants in Muzarabani emphasized that some farmers would like to be able to purchase inputs at harvest time, given the sky-rocketing inflation. If inputs are paid for in advance, they don't have to worry about what they will be charged for them at the end of the season.
- The next concern stems from the rather erratic past performance of the Zimbabwe cotton sector with respect to seed cotton pricing (Table 7). In particular, the last few years (since 2001) have seen more cases of disappointing prices than of attractive ones. The two years that have bucked this trend have been the two years of strongest competition (2004 and 2006). While in theory the farmers' unions can represent the interests of farmers in pricing discussions, we have questioned their ability to do this (section 4.1). Moreover, in 2006, as we understand it, the pricing committee did not reach agreement on a fair price, while the price suggested by companies would have given farmers a very poor deal (well below the 25 percent return on their investment that they are supposed to get). Fortunately, competition took over and made the discussions redundant. In 2007 there is a danger that this possibility will be “regulated away”.
- Finally, while we recognize that high quality pre-harvest services are probably more effective at raising production than plausibly higher prices (section 5.3), there is an additional dimension of farmer perceptions and the impact of the new regime on the level of trust that exists between companies and farmers. In the focus group discussions, it became clear that some farmers realize that in

recent years they have both “had their cake and eaten it”. The better off producers have been able to take pre-harvest services from established companies and sell some of their output to newer entrants for higher prices. They are reluctant to see this loophole closed! Yet, beyond this they have tasted some genuine benefits from competition and mistrust the motives of established companies in closing that competition down. Particularly when world lint prices are low, they look to competition to deliver them the best possible prices within the limited scope available. A duopoly could pay farmers a modest share of the c.i.f. price in 1995-96 and cotton was still a very attractive proposition for farmers, as world prices were high. That is no longer the case. Companies may be unwise to suddenly restrict competition too drastically in 2007.

Given these concerns, what can be done?

If NACGMB is set on implementing the regulatory regime outlined above, then it would be wise for them to offer a generous seed cotton price within the pricing committee as a gesture of goodwill and trust building towards producers. Alternatively, some latitude should be left in the market shares allocated to individual companies on the basis of their input support (for example, having the allocated shares only totalling 80 percent of the harvest), such that there is still some room for genuine price competition at harvest time.

Of course, as emphasized earlier, efforts should continue to close down other loopholes that distort the playing field between companies at harvest time, such that established companies have less to fear from competition for seed cotton.

7. Lessons Learned

Zimbabwe provides a “natural experiment” in what happens when sectoral structure is changed within an already liberalised African cotton sector. In contrast to assessments of the impact of initial sector liberalization, this helpfully separates out the influence of the change in sectoral structure from that of the shift from public to private ownership. Unfortunately, Zimbabwe’s “natural experiment” has occurred at a time of great macro-economic instability, so we instead have to try and separate out the impact of the change in sectoral structure from that of macro-economic instability!

Our basic assessment of the link between macro-economic instability and sectoral dynamics is as follows:

- The main impact of macro-economic instability on the cotton sector has been through changes in the real exchange rate. The Zimbabwe case dramatically highlights the importance of the real exchange rate on the profitability and performance of a commodity sector such as cotton;
- The initial fall in the real exchange rate during 2001-2003 created conditions whereby companies could increase profits (albeit under considerable uncertainty), as the benefits of the exchange rate change were not passed onto producers. Prior to this, producers had received a very high share of world lint prices. The high profits that companies reaped during 2001-2003 sent a signal that encouraged many other companies to enter the sector.

- Continued falls in the real exchange rate mean that the Zimbabwe sector remains cost competitive in US dollar terms, despite inevitably higher costs arising from the demands of operating in a highly distorted and unstable macro-economic environment. In addition, some of the current distortions within the Zimbabwe economy, such as artificially low electricity prices and loans from commercial banks at negative real interest rates, also help keep costs down. Thus, the number of companies continues to increase.

Turning to the impact on performance of the change in sectoral structure, we note three main findings:

- Increased competition for seed cotton has had a major negative impact on seed cotton and lint quality (section 4.6). In section 6.2 we provide some explanation for this: the profits that companies can obtain from pursuing a “high input, high quality” strategy amongst their smallholder growers are not as high as those that can be obtained from free-riding on input provision by others, even if the free-riding firm then receives a lower price from its lint sales. Such a strategy will be further undermined by the persistence of loopholes, such as 100 percent forex retention for some firms and not others, that mean that the playing field for seed cotton purchase is not level. In the absence of strong incentives for new firms to maintain quality, competition for seed cotton has led to quality control measures being de-emphasised.
- An initial impact of increased competition was to increase the number of company-run input credit schemes and hence credit access for producers. However, increased competition has also intensified side-selling of seed cotton, which makes it more costly for companies to offer credit. In 2006-07 the number of producers receiving some (albeit hugely varying quantities) of inputs on credit is at a record level. However, this has only happened because NACGMB has secured agreement that provision of inputs to producers should be a condition for being granted an export permit for lint sales. Without such regulatory support, provision of input credit might not be sustained under the current, more competitive output marketing conditions.
- Increased competition has raised seed cotton prices – a fact that is appreciated by producers - but the impact on average seed cotton prices has not been as strong as might be expected. We attribute this to the fact that the two main firms still control around 80 percent of the market (Figure 5). New firms would have to be larger and financially stronger than they are now to raise the average seed cotton price received by producers season by season.

Related to this final point, looking across the whole post-liberalization period, the seed cotton pricing performance of the Zimbabwe cotton sector has not been as strong as had been suggested by previous evaluations (e.g. Poulton et al. 2004). In particular, the more competitive Tanzanian sector has performed better on this indicator (Table 8), if not on others. However, our discussion in section 5.3 suggested that some reduction in seed cotton prices might be a fair price to pay for a sector that delivers effective pre-harvest services to producers. These services are the key to raising production in the Zimbabwe context and a more coordinated sector may well have greater poverty reduction impacts than a more competitive one that fails to support producers in their production activities.

Overall, the evidence presented in this report points to a clear tension between competition and coordination in Zimbabwe - a tension that will eventually confront all other liberalizing cotton sectors in Africa. As is already abundantly clear to leading stakeholders in the sector, if Zimbabwe policy makers wish the national cotton industry to maintain its historic “high yielding and high quality” profile, then some degree of regulation is necessary to enforce this. However, as our brief discussion of the proposed regulatory regime for 2006/07 made clear (section 6.2), care has to be taken that such regulation does not completely remove competition from the system.

8. Appendix Tables

Appendix Table 1: Ginnery Budget 2006

A) Basic Assumptions

Ginning out-turn ratio	41%		bale weight (kg)	200			
wastage	0.4%		bales/day	225			
seed loss	3%		days operation per year	150			
ginnery capacity (tons seed cotton/year)	25000		production (tons lint/day)	45			
capacity utilisation	64%		actual production of lint per year	6741			
actual supplies of seed cotton per year	16050						
No.of farmers served	7500		Tons/farmer	2.1			
Buying posts	80		Tons/post	201			
Farmer Type Served	Number	Acres (full package)	Acres (seed+chemicals)	Production	Total Input Cost (US\$)		
Group1	2000	6	4	9600	1456000		
Group2	3500		5	5250	560000		
Group3	2000		2.0	1200	128000		
Total	7500			16050	2144000		
Input cost/acre (US\$)		100	32				
Yield (kg/acre)		600	300				
Prefinancing rate	90%		Repayment rate	90%			
Month Purchased	Proportion	Quantity	Price (Z\$/kg)	Price (US\$/kg)	Total Paid		
May	0.3	4815	50000	0.18	844		
June	0.3	4815	70000	0.31	1512		
July	0.3	4815	85000	0.30	1449		
July	0.1	1605	110000	0.39	625		
		16050			4431 Average 0.28		

Note: All Z\$ prices are converted to US\$ at that month's exchange rate

Appendix Table 1: Ginnery Budget 2006 (continued)

B) Staffing and Financing Assumptions

Working Capital Financing	Share	Value (US\$)	Value (Z\$)	Rate (%)		Months	Repayment (Z\$)	Repayment (US\$)	Cost
Local commercial bank	0.2	886226	1.81994E+11	13%	p.m.	3	262598790714	523105	-363121
External	0.8	3544903		8%	p.a.	3			70898
		4431129							-292223
Field Staff	Number	Wages (Z\$ p.m.)	Wages (US\$ p.m.)	No.of months	Total				
LEOs	10	300000	129.59	12	15551				
Area managers	5	500000	215.98	12	12959				
Temporary staff at buying posts	560	100000	43.20	4	96760				
Ginnery Staff									
Permanent Staff	35	500000	215.98	12	90713				
Casual Labourers (Pre-Grading)	15	100000	43.20	4	2592				
Casual Labourers (Ginnery)	162	100000	43.20	5	34989				
					125702				

Notes: All Z\$ prices are converted to US\$ at that month's exchange rate.

Temporary staff costs are based on January 2007 wage cost; other staff costs are based on assumed multiples of this.

Interest rate on loans from Zimbabwe commercial banks = 450% p.a., i.e. negative real rate, but companies are constrained as to the quantity they can obtain from this source.

C) Sales Price Assumptions Used in Baseline Scenarios

	Price (US\$/kg)			
Domestic Sales (ex-ginnery)	0.86		Z\$/kg	3000
A Index	1.28		US\$/lb	0.58
Premium (\$/lb)		Share		
0.07	1.43	0.05		
0.05	1.39	0.1		
0.03	1.34	0.4		
0	1.28	0.45		

Appendix Table 1: Ginnery Budget 2006 (continued)
D) Budget for Seed Cotton Purchase, Ginning and Sale

	cost/kg seed cotton	cost/kg lint cotton				
	US\$	US\$				
Salaries of permanent field staff	0.002					
Vehicle depreciation	0.001		years	5		
Fuel	0.0015		US\$/litre	1		
Interest Loss on Input Credit	0.033					
Loan Default	0.012					
Temporary staff at buying posts	0.006					
Buying post licences (to district council)	0.002		Cost (Z\$)	1000000		
Woolpacks	0.002		Cost (Z\$)	500000		
Transport of seed cotton to buying post	0.001		Cost (Z\$)	40000		
purchase price of seed cotton	0.28					
Transport: buying post to depot	0.01		Z\$/bale/km	15000	av.distance	25
Transport: depot to ginnery	0.02		Z\$/ton/km	42500	av.distance	85
financing cost	-0.018					
cost at ginnery gate	0.34	0.84				
ginnery costs						
amortization of ginnery		0.015	cost (US\$)	1000000	years	10
amortization of construction		0.002	cost (US\$)	300000	years	20
amortization of warehouse		0.001	cost (US\$)	200000	years	20
energy		0.0004				
casual salary		0.006				
permanent staff		0.013				
maintenance cost		0.02	WCA cost			
packaging		0.02	US\$/bale	4.5		
capital cost (Total Cost/2 * interest)		0.009				
overhead (20% of total company costs)		0.05	O/H rate	20%		
total ginnery costs		0.138				
value of seed sale (deduct)		0.13	seed P	95	US\$/ton	
total cost ex factory (f.o.t.)		0.845	US\$/lb	0.38		
transport costs (depot to f.o.b.)		0.132	US\$/lb	0.06		
Agency commissions/Zimtrade surcharges		0.0253	US\$/lb	0.0115		
f.o.b. cost		1.003	US\$/lb	0.46		
sea freight		0.055	US\$/lb	0.025		
cfrr cost (Far East)		1.058	US\$/lb	0.48		

Notes: All Z\$ prices are converted to US\$ at that month's exchange rate.

Interest loss assumes interest rate charged to farmers is well below inflation.

Permanent staff includes ginnery management, but not HQ (included in overhead)

Appendix Table 2: Budget for Farmer Group 1

A) Assumptions

No.of acres cultivated	20			
No.of acres fertilised	10	Yield (kg/acre)	700	
No.of acres unfertilised	10	Yield (kg/acre)	400	
Total quantity produced (kg)	11000			
Fertilisation	Inorganic fertiliser and manure on separate portions of plot(s)			
Sales strategy	initial sale for school fees etc, then wait for price to rise before selling remainder			
Month	Qty Sold (kg)	Price (Z\$/kg)	Price (US\$/kg)	Revenue (US\$)
May-06	1000	50000	0.18	175.28
Jun-06	8000	70000	0.31	2512.80
Jul-06	2000	105000	0.37	743.73
Total				3431.82
Average Price (US\$/kg)	0.31			
Wage rate (US\$/day)	1			
Production Practices				
Manure Application	on fields where no inorganic fertiliser applied, every three years during pre-season			
Land Preparation	own plough, family labour, off-season			
Planting	row planting, family labour			
Basal Fertiliser	family labour, at planting			
Weeding	hired labour		Times/season	4
Top Dressing	family labour			
Spraying	own pump		Times/season	8
Harvesting	hired labour			
Transport	own cart			
Clearing old plants	hired labour, by August 15th deadline			

Appendix Table 2: Budget for Farmer Group 1 (continued)

B) Budget for Acre with Inorganic Fertiliser

	Units	Unit Cost (Z\$)	No. of Units	Total (Z\$)	Month	Total (US\$)	Notes
Family/Management Time							
Land Preparation	mandays		1				1 span, 2 people * 4 hours
Planting + Basal Fertiliser	mandays		1				4 people * 2 hours
Weeding	mandays		4				supervision
Top Dressing	mandays		0.5				2 people * 2 hours
Spraying	mandays		2				2 hours per spray (one person can spray 4 acres per day)
Harvesting	mandays		4				3 workers + manager each doing 2 sacks per day
Transport	mandays		1				
Clearing old plants	mandays		0				no need for supervision - just check that job done?
TOTAL			13.5				
Hired Labour, Services or Opportunity Cost							
Land Preparation	plough opp cost	10000	1	10000	Nov-06	7.12	ploughs are hired in Gokwe
Weeding	cultivator opp cost	3333	1	3333	Nov-06	2.37	quicker work than ploughing
Weeding	line	100	280	28000	Feb-07	8.07	assumes cultivator used; paid by row, does not vary by weeding
Spraying	pump opp cost					3.2	Tz figure, but no market for services in Zim
Harvesting	kg	5000	525	2625000	Jun-06	11.78	
Transport (field-house)	cart opp.cost	500	1.4	700	Nov-06	0.50	cart can carry 500kg
Clearing old plants	line	50	70	3500	Sep-06	6.19	
TOTAL						39.23	
Input Costs							
Seed	kg	1650	10	16500	Nov-06	11.74	
Basal Fertiliser (Compound L)	50kg bag	106000	1.6	169600	Feb-07	48.88	four bags per hectare
Top Dressing (AN)	50kg bag	68000	0.8	54400	Feb-07	15.68	two bags per hectare
Pesticide	bottle	8000	8	64000	Feb-07	18.44	one bottle sufficient to spray a hectare; price at which gp1 farmers sell chemicals on
TOTAL						94.74	

Appendix Table 2: Budget for Farmer Group 1 (continued)

C) Budget for Acre with Manure

	Units	Unit Cost (Z\$)	No.of Units	Total (Z\$)	Month	Total (US\$)	Notes
Family/Management Time							
Manure Application	mandays		2				total 4 people * 3 days every 3 years; assumed two are hired
Land Preparation	mandays		1				1 span, 2 people * 4 hours
Planting	mandays		0.75				3 people * 2 hours
Weeding	mandays		4				supervision
Spraying	mandays		2				2 hours per spray (one person can spray 4 acres per day)
Harvesting	mandays		2.3				3 workers + manager each doing 2 sacks per day
Transport	mandays		1				
Clearing old plants	mandays		0				no need for supervision - just check that job done?
TOTAL			11.0				
Hired Labour, Services or Opportunity Cost							
Manure Application	mandays		2			2	total 4 people * 3 days every 3 years; assumed two are hired
Manure Application	cart opp.cost	500	2	1000	Nov-06	0.71	6 cartloads per acre every 3 years @ Z\$500 per load
Land Preparation	plough opp cost	10000	1	10000	Nov-06	7.12	lower figure than Tanz - many own ploughs, no market for services
Weeding	cultivator opp cost	3333	1	3333	Nov-06	2.37	quicker work than ploughing
Weeding	line	100	280	28000	Feb-07	8.07	assumes cultivator used; paid by row, does not vary by weeding
Spraying	pump opp cost					3.2	Tz figure, but no market for services in Zim
Harvesting	kg	5000	300	1500000	Jun-06	6.73	
Transport (field-house)	cart opp.cost	500	0.8	400	Nov-06	0.28	cart can carry 500kg
Clearing old plants	line	50	70	3500	Sep-06	6.19	
TOTAL						33.97	
Input Costs							
Manure							no market for manure
Seed	kg	1650	10	16500	Nov-06	11.74	
Pesticide	bottle	8000	8	64000	Feb-07	18.44	As for budget with inorganic fertiliser
TOTAL						30.19	

Appendix Table 3: Budget for Farmer Group 2

A) Assumptions

No.of acres cultivated	7.5			
Yield (kg/acre)	320			
Sales strategy	sell enough to repay loan, then wait to sell remainder			
Month	Qty Sold (kg)	Price (Z\$/kg)	Price (US\$/kg)	Revenue (US\$)
May-06	500	50000	0.18	87.64
Jun-06	1900	70000	0.31	596.79
Total				684.43
Average Price (US\$/kg)	0.29			
Wage rate (US\$/day)	1			
Production Practices				
Manure Application	no			
Land Preparation	own plough, family labour, off-season			
Planting	row planting, family labour			
Basal Fertiliser	family labour, done at planting			
Weeding	family + hired labour		Times/season	3
Top Dressing	none obtained			
Spraying	own pump		Times/season	7
Harvesting	hired labour			
Transport	own cart			
Clearing old plants	hired labour, by August 15th deadline			

Appendix Table 3: Budget for Farmer Group 2 (continued)

B) Budget per Acre

	Units	Unit Cost (Z\$)	No. of Units	Total (Z\$)	Month	Total (US\$)	Notes
Family/Management Time							
Land Preparation	mandays		1				1 span, 2 people * 4 hours
Planting + Basal Fertiliser	mandays		1				4 people * 2 hours
Weeding	mandays		9				3 family + 1 hired for 3 days
Spraying	mandays		1.75				2 hours per spray (one person can spray 4 acres per day)
Harvesting	mandays		1.8				3 workers + manager each doing 2 sacks per day
Transport	mandays		1				
Clearing old plants	mandays		0				no need for supervision - just check that job done?
TOTAL			15.6				
Hired Labour, Services or Opportunity Cost							
Land Preparation	plough opp cost	10000	1	10000	Nov-06	7.12	ploughs are hired in Gokwe
Weeding	line	200	54	10800	Feb-07	3.11	6 lines/day without cultivator; more expensive per row than if cultivator used
Spraying	pump opp cost					2.8	Tz figure, but no market for services in Zim
Harvesting	kg	5000	240	1200000	Jun-06	5.38	
Transport (field-house)	cart opp.cost	500	0.64	320	Nov-06	0.23	cart can carry 500kg
Clearing old plants	line	50	70	3500	Sep-06	6.19	
TOTAL						24.84	
Input Costs							
Seed	kg	1650	10	16500	Nov-06	11.74	
Basal Fertiliser (Compound L)	50kg bag	106000	0.27	28267	Feb-07	8.15	two bags per farmer
Pesticide	bottle	8000	7	56000	Feb-07	16.14	one bottle sufficient to spray a hectare; price at which gp1 farmers sell chemicals on
TOTAL						36.03	

Appendix Table 4: Budget for Farmer Group 3 (Young Households)

A) Assumptions

No.of acres cultivated	2			
Yield (kg/acre)	240			
Sales strategy	sell immediately			
Month	Qty Sold (kg)	Price (Z\$/kg)	Price (US\$/kg)	Revenue (US\$)
May-06	250	50000	0.18	43.82
Jun-06	230	70000	0.31	72.24
				116.06
Average Price (US\$/kg)	0.24			
Wage rate (US\$/day)	1			
Production Practices				
Manure Application	no			
Land Preparation	assist equipment owner to plough his land, then borrow plough for own (late)			
Planting	row planting, family labour			
Basal Fertiliser	none			
Weeding	family labour		Times/season	3
Top Dressing	none			
Spraying	borrow pump		Times/season	5
Harvesting	family labour			
Transport	headloading			
Clearing old plants	family labour, by August 15th deadline			

Appendix Table 4: Budget for Farmer Group 3 (continued)

B) Budget per Acre

	Units	Unit Cost (Z\$)	No. of Units	Total (Z\$)	Month	Total (US\$)	Notes
Family/Management Time							
Land Preparation	mandays		2				assist equipment owner to plough his land, then borrow plough for own (late)
Planting	mandays		0.5				2 people * 2 hours
Weeding	mandays		30				2 people * 5 days per weeding (without cultivator)
Spraying	mandays		2.5				2 hours per spray; spray for sprayer owner first
Harvesting	mandays		5.5				2 sacks per person per day
Transport	mandays		1				
Clearing old plants	mandays		1				
TOTAL			42.5				
Hired Labour, Services or Opportunity Cost							
none							
TOTAL						0.00	
Input Costs							
Seed	kg	1650	10	16500	Nov-06	11.74	
Pesticide	bottle	8000	3.33	26667	Feb-07	7.68	one bottle sufficient to spray one hectare, but stretched to cover more
TOTAL						19.43	

Appendix Table 5: Exchange Rates Used in Budget Calculations

Year	Month	Official	Parallel 1	Parallel 2	"Parallel"	Weighting		Effective
						Official	"Parallel"	
2006	January	91387	110000	100000	105000	0.3	0.7	103260
	February	98695	140000	170000	155000	0.3	0.7	138260
	March	99106	210000	215000	212500	0.3	0.7	178510
	April	99021	215000	220000	217500	0.3	0.7	182116
	May	101040	220000	280000	250000	0.3	0.7	205359
	June	101011	250000	300000	275000	0.3	0.7	222859
	July	101065	300000	420000	360000	0.3	0.7	282359
	August	250	600	620	610	0.3	0.7	502
	September	250	700	700	700	0.3	0.7	565
	October	250	1400	1200	1300	0.3	0.7	985
	November	250	2100	1700	1900	0.3	0.7	1405
	December	250	2800	2750	2775	0.3	0.7	2018
2007	January	250	3400	3000	3200	0.3	0.7	2315
	February	250	4700	5000	4850	0.3	0.7	3470

Sources: RBZ, private sources

Appendix Table 6: PPP Conversion Factors

		2001	2002	2003	2004	2005	2006	
1	GDP (US\$bn)	12.9	30.9	10.5	4.7	4.5	8.2	
2	GDP PPP (US\$bn)	36.7	35.7	32.6	32.1	30.6	29.7	
3	GDP per capita (US\$)	1104	2652	894	401	383	700	
4	GDP per capita PPP (US\$)	3145	3068	2776	2737	2607	2534	
								Average
	PPP factor (1) = 2/1	2.84	1.16	3.10	6.83	6.80	3.62	4.06
	PPP factor (2) = 4/3	2.85	1.16	3.11	6.83	6.81	3.62	4.06

Source: <http://www.dfat.gov.au/geo/fs/zimb.pdf> (downloaded 16/3/2007)

Note: 2006 data are IMF estimates

9. References

- Baffes, J. (2001).* Policy Reform Experience in Cotton Markets. in *Commodity Market Reforms: Lessons of Two Decades*. T. Akiyama, J. Baffes, D. Larson and P. Varangis (ed). Washington DC, World Bank, p 165-189.
- Deininger, K., R. van den Brink, H. Hoogeveen and S. Moyo (2000).* How Land Reform Can Contribute to Economic Growth and Poverty Reduction: Empirical Evidence from International and Zimbabwean Experience.
- Estur, G. (2007).* *Lint Marketing and Quality Performance*. Paper prepared for the "Multi-Country Review of the Impact of Cotton Sector Reform in sub-Saharan Africa", World Bank, Washington DC.
- Gordon, A. and A. Goodland (2000).* "Production Credit for African Smallholders: Conditions for Private Provision." *Savings and Development* XXIV(1): 55-83.
- Hall, P. and D. Soskice (2001).* An Introduction to Varieties of Capitalism. in *Varieties of Capitalism: The Institutional Foundations of Comparative Advantage*. P. Hall and D. Soskice (ed). Oxford, Oxford University Press, p 1-68.
- Hanyani-Mlambo, B., M. Larsen and C. Poulton (2002).* An Overview of the Cotton Sector in Zimbabwe. Report produced for the project "Competition and Coordination in Cotton Market Systems of Southern and Eastern Africa", Imperial College London, Wye, December 2002, http://www.imperial.ac.uk/agriculturalsciences/research/sections/aebm/projects/cotton_se_africa.htm.
- Hanyani-Mlambo, B., M. Larsen and C. Poulton (2003).* Zimbabwe Country Report 2002. Report produced for the project "Competition and Coordination in Cotton Market Systems of Southern and Eastern Africa", Imperial College London, Wye, December 2003, http://www.imperial.ac.uk/agriculturalsciences/research/sections/aebm/projects/cotton_se_africa.htm.
- Hanyani-Mlambo, B. and C. Poulton (2004).* Zimbabwe Country Report, 2003. Report produced for the project "Competition and Coordination in Cotton Market Systems of Southern and Eastern Africa", Imperial College London, Wye, August 2004, http://www.imperial.ac.uk/agriculturalsciences/research/sections/aebm/projects/cotton_se_africa.htm.
- Hanyani-Mlambo, B., C. Poulton and M. Larsen (2005).* Zimbabwe Country Report, 2004. Report produced for the project "Competition and Coordination in Cotton Market Systems of Southern and Eastern Africa", Imperial College London, Wye, March 2005, http://www.imperial.ac.uk/agriculturalsciences/research/sections/aebm/projects/cotton_se_africa.htm.
- Jansen, J. and A. Rukovo (1992).* Agriculture and the Policy Environment: Zambia and Zimbabwe. Technical Paper, OECD Development Centre, July 1992.
- Jayne, T., L. Rubey, D. Tschirley, M. Mukumbu, M. Chisvo, A. Santos, M. Weber and P. Diskin (1995).* Effects of market reform on access to food by low-income households: Evidence from four countries in Eastern and Southern Africa, Department of Agricultural Economics, Michigan State University, East Lansing.
- Jayne, T., T. Yamano, M. Weber, D. Tschirley, R. Benfica, A. Chapoto and B. Zulu (2003).* "Smallholder Income and Land Distribution in Africa: Implications for Poverty Reduction Strategies." *Food Policy* 28(3): 253-275.

- Jenkins, C. (1997).* "The Politics of Economic Policy-Making in Zimbabwe." *Journal of Modern African Studies* 35(4): 575-602.
- Larsen, M. (2002).* "Is Oligopoly a Condition of Successful Privatization? The Case of Cotton in Zimbabwe." *Journal of Agrarian Change* 2(2): 185-205.
- Larsen, M. and C. Poulton (2005).* Survey of International Cotton Buyers: Trends in Purchasing from Southern and Eastern Africa. Report produced for DFID as part of the project "Competition and Coordination in Cotton Market Systems of Southern and Eastern Africa", Imperial College London, Wye, March 2005.
- Mariga, I. (1994).* Cotton Research and Development. in *Zimbabwe's Agricultural Revolution*. M. Rukuni and C. Eicher (ed). Harare, University of Zimbabwe Publications, p 219-233.
- Minot, N. and L. Daniels (2002).* Impact of Global Cotton Markets on Rural Poverty Reduction in Benin. MSSD Discussion Paper, International Food Policy Research Institute, Washington DC, November 2002.
- Moyo, S. (1995).* The Land Question in Zimbabwe. Southern Africa Regional Institute for Policy Studies, SAPES Books, Harare.
- Ndlela, D. and P. Robinson (2007).* Distortions to Agricultural Incentives in Zimbabwe. Draft report produced for the World Bank project on "Distortions to Agricultural Incentives", Zimconsult, Harare, February 2007.
- Poulton, C. (1998).* Cotton Production and Marketing in Northern Ghana: The Dynamics of Competition in a System of Interlocking Transactions. in *Smallholder Cash Crop Production Under Market Liberalisation: A New Institutional Economics Perspective*. A. Dorward, J. Kydd and C. Poulton (ed). Wallingford, CAB International.
- Poulton, C., P. Gibbon, B. Hanyani-Mlambo, J. Kydd, W. Maro, M. Nylandsted Larsen, A. Osorio, D. Tschirley and B. Zulu (2004).* "Competition and Coordination in Liberalized African Cotton Market Systems." *World Development* 32(3): 519-536.
- Poulton, C. (2005).* Competition, Coordination, Industry Dynamics and Poverty in Liberalised African Cotton Sectors: Insights from Household Modelling Work. Report produced for the project "Competition and Coordination in Cotton Market Systems of Southern and Eastern Africa", Imperial College London, Wye, March 2005, http://www.imperial.ac.uk/agriculturalsciences/research/sections/aebm/projects/cotton_se_africa.htm.
- Rukuni, M. (1994).* The Evolution of Agricultural Policy:1890-1990. in *Zimbabwe's Agricultural Revolution*. M. Rukuni and C. Eicher (ed). Gweru, University of Zimbabwe Publications Office, p 15-39.
- Rusike, J., C. Sukume, A. Dorward, S. Mpeperekwi and K. Giller (2000).* The Economic Potential for Soya Bean Production in Zimbabwe. Soil Fert Net Special Publication, Soil Fertility Network, Harare, February 2000.
- Takavarasha, T. (1994).* Agricultural Pricing Policy. in *Zimbabwe's Agricultural Revolution*. M. Rukuni and C. Eicher (ed). Harare, University of Zimbabwe Publications.
- The Cotton Company of Zimbabwe Ltd (2001).* Annual Report 2000/2001, The Cotton Company of Zimbabwe Ltd, Harare.
- Woodend, J. (1995).* Biotechnology and sustainable crop production in Zimbabwe, OECD

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