

BACKGROUND PAPER

FOR THE WORLD DEVELOPMENT REPORT 2008

Bulk Export Commodities: Trends and Challenges

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Background Paper for the 2008 World Development Report

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Bulk Commodity Exports: Trends and Challenges

This background paper focuses on cotton, coffee, cocoa, tea and tobacco markets and on the marketing of these crops by producers and exporters in low income countries. As will be shown below, the total volumes of these crops that are traded internationally is modest compared to some other agricultural commodities. However, a sizeable number of low income countries are heavily dependent on the export of these commodities for their foreign exchange earnings. Over the past decade or more, international development agencies, including the World Bank, have encouraged the liberalisation of markets for these commodities within exporting countries. The experience of liberalisation has been broadly positive, with an influx of private capital, management and marketing expertise plus market competition raising the share of the export price received by producers and typically leading to prompter payment for crops purchased (Akiyama *et al.*, 2001). However, the liberalisation of markets has thrown up new challenges, including how to supply inputs on credit to smallholder producers and how to maintain produce quality in a competitive market setting (Shepherd and Farolfi, 1999).

The paper is divided into four main parts. The first part provides an overview of trends in global commodity markets, with a particular focus on the five crops listed above. The second part considers the organisation of value chains for bulk export commodities and whether one can produce a helpful typology of the structure and operations of such chains. This part also briefly addresses the general question of the role of commodity exports in economic development, given the trends described. The third part examines the issue of produce quality within liberalised export commodity systems: how has liberalisation affected quality and how can quality be improved within liberalised systems? Finally, the fourth part considers experience with the supply of inputs on credit to smallholder producers in a competitive market setting. We conclude with some overall observations about the organisation and performance of liberalised export commodity market systems.

1. *International Commodity Markets*

Commodity Price Trends

The long-term downward trend in real commodity prices is a well-established fact in development literature (ODI, 1995). As Table 1 shows, this downward trend has continued in recent years, with most of the listed commodities showing price falls even in nominal terms. Gibbon, 2006b observes that the price of most fell sharply in the latter half of the 1990s, with a (generally partial) recovery from historically low prices during 2002-05. However, in any given period there are important short-medium term differences across commodities. Thus, according to Table 1, the unit prices of vegetables, soyabeans, bananas, tea and beef rose in nominal terms over the period 1993-95 to 2003-05, whereas the price of coffee fell particularly sharply.

Table 1: Trade in Selected Commodities Ranked by Unit Price Change 1993/95-2003/05

Commodity	Change in volume 93/5 to 03/05 (%)	Change in value 93/5 to 03/05 (%)	Unit price change 93/5 to 03/05 (%)	Av. value of trade 1993-95 (\$ bill)	Av. value of trade 2003-05 (\$ bill)
Fresh & chilled Veg	69.7	106.8	17.5	3.2	6.7
Soybeans	99.9	118.9	9.5	7.1	15.5
Bananas	39.7	43.4	3.1	3.5	5
Tea	54	65.4	3	1.8	3
Cotton	48.3	51.1	1.9	5.4	8.1
Beef	21.5	23.4	1.6	14.9	18.4
Corn/Maize	25.6	21.5	-0.3	9.3	11.3
Cocoa	44.3	38.3	-4.2	2.5	3.5
Cut flowers	72.9	48.7	-4.4	3.4	5.1
Natural Rubber	45.2	38.6	-4.5	5.4	7.5
Tropical Logs	-12.6	-20.8	-9.3	2.3	1.8
Trop. S/wood	-5.1	-15.9	-11.5	2.9	2.4
Sugar	38.8	14.6	-17.7	9.2	10.5
Chicken	97.8	61.3	-18.4	6.9	11.1
Rice	67.5	41.7	-18.4	5.2	7.4
Coffee	16.9	-32	-41.9	8.6	5.9
Seafood	n/a	47.8	n/a	31.1	46

Source: Comtrade data gathered by Gibbon, 2006b

Note: the figures in this table are nominal, not real, dollars

The long-term downward trend in commodity prices is driven, predictably, by an expansion of global supply relative to demand¹. The expansion in supply may come either from the entry of new supplier countries into international trade or from increases in production (due either to area expansion or productivity increase) in existing exporting nations. Thus, the 1990s witnessed a large expansion of coffee exports first from Vietnam and then from Brazil that greatly exceeded the growth in global consumption. In cotton the spread of GM cotton varieties in major producing countries such as the US, China and Australia has increased productivity and stimulated global production, which has reached record levels in recent years.

By contrast, demand for some of these commodities is relatively stagnant. Thus, the US, Brazil, Germany, Japan, France and Italy between them account for 50% of the world's coffee consumption. These are mature markets where populations are growing slowly, incomes are in most cases high and consumers can afford as much coffee as they want. For health and other reasons, some consumers are, in fact, switching away from coffee to other drinks. Thus, coffee consumption in these markets has stagnated and the limited growth in total coffee consumption is derived mainly from "new" markets, such as the transition economies of Eastern Europe and the former Soviet Union (Baffes *et al.*, 2005). Consumption of tea (black, as opposed to green) is similarly stagnant in traditional western European markets, but there is more vibrant growth in markets in the Middle East, Eastern Europe and the former Soviet Union. Coffee and tea also suffer from being substitutes in their core markets, so higher demand for one is likely to be (partially) at the expense of the other (Baffes *et al.*, 2005).

¹ There are, of course, other short-medium term factors, such as the influence of OECD subsidies. Within our focus commodities, these only affect cotton (Oxfam International, 2002; Gillson *et al.*, 2004).

Commodity groups that have witnessed nominal price increases (or only modest falls) in recent years are those for which global consumption is still rising fast. Thus, consumption of vegetables (the subject of another background paper for WDR 2008) is increasing in many countries driven by rising incomes and/or increased health consciousness². For a number of the other commodities in Table 1, consumption growth is occurring primarily in Asia. Thus, increasing demand for soyabeans is driven by growth in the Asian, and especially Chinese, livestock (feed) industry. In the case of cotton, there has been a massive relocation of spinning capacity to Asia, and particularly China, in recent years. Although the world's second largest cotton producer, China is also the world's biggest importer, expected to account for 45% of all lint imports in 2005/06 and 2006/07, up from 19% in 2004/05 (ICAC Press Release, 01/05/2006).

Tobacco is not included in Table 1. Globally, tobacco consumption is rising (and, in the next few years, is predicted to rise) at around 2% p.a. However, this average hides a large contrast between developing countries (70%+ of global consumption), where consumption is rising in excess of 3% p.a. and developed economies, where consumption is falling (Jaffee, 2003). China alone accounts for around 44% of world cigarette consumption and 38% of production (Jaffee, 2003).

Traded Volumes

Returning to Table 1, it can be seen that the volume of commodities traded has been rising rapidly in recent years. On the supply side, this is the corollary of rapid increases in production. On the demand side, this reflects the fact that the world's most rapid economic growth is occurring in Asia. According to Mayer and Fajarnes, 2005, China, India and several of the other fast-growing Asian economies may be classified as "natural resource poor". Hence, as incomes grow in these countries, much of their additional consumption of agricultural (and mineral) commodities has to be satisfied through imports.

Considering our focus commodities in this paper, between 1993-95 and 2003-05 the volume of tea traded on international markets increased by 54%. For cotton lint, the figure was 48% and for cocoa it was 44%. Even coffee experienced a 16% increase in traded volume. Thus, even when price changes are taken into account, the value of international trade increased by 35-65% over the period in question for tea, cotton and cocoa. There are market opportunities for producers that can sell at prevailing prices.

Mayer and Fajarnes, 2005 specifically note the rising importance of China as a destination for Sub-Saharan Africa's primary exports, including cotton. However, there is considerable "mismatch" in the agriculture/food area between what China is demanding and what Africa is good at supplying. Current efforts on the part of the Nigerian government to promote cassava exports to China (see Nweke, 2004 for the cassava story in West Africa more generally) are a key test of Africa's ability to diversify into new export commodities for which world – and especially Asian/Chinese – demand is growing.

Further consideration of Table 1 also reveals that the value of international trade in cotton, coffee, cocoa and tea is modest compared to the value of trade in soyabeans, beef or seafood.

² However, according to Gibbon, 2006b, the increase in the unit price of vegetable exports in Table 1 is due at least in part to an increase in the level of post-harvest value addition by exporters over the period in question.

However, the five commodities featured in this report are of great importance to a group of low income countries that depend heavily on them for their foreign exchange earnings. Using COMTRADE data, Gibbon, 2006b identifies 44 developing countries that derived in excess of 50% of their export revenues from commodities other than oil during 2003-05. Of these, 16 rely heavily on the export of one or more of our five focus commodities (Table 2). In the case of Burundi, Mali, Malawi, Burkina Faso, Rwanda, Benin and Ethiopia, more than 50% of merchandise exports are accounted for by just one of the five commodities³.

Table 2: Share of Non-Oil Commodities in Total Exports of Selected Low Income Countries, 2003-05

Country	Share (%)	Which Focus Commodities are Important?
Burundi	93.76	Coffee
Mali	89.32	Cotton
United Rep. of Tanzania	85.18	(gold), cotton, coffee, tobacco
Malawi	85.00	Tobacco
Burkina Faso	84.24	Cotton
Ghana	83.22	(gold), cocoa
Rwanda	82.01	Coffee
Benin	81.40	Cotton
Nicaragua	74.54	Coffee
Zimbabwe	73.71	tobacco, cotton
Ethiopia	73.61	Coffee
Uganda	72.07	Coffee
Honduras	63.35	Coffee
Côte d'Ivoire	59.15	cocoa, coffee, cotton
Togo	58.47	cocoa, coffee, cotton
Kenya	51.40	Tea

Source: calculations by Peter Gibbon using COMTRADE data

Price Projections

Table 3 provides price projections for a range of agricultural commodities until 2015. From the final column it can be seen that the price of many commodities is expected to continue to fall in real terms. However, as always, there is some variability around this broad trend. Amongst our focus commodities, coffee, tea and tobacco are all expected to experience sharp price falls, due to the stagnation in demand in major markets described above, whilst cotton and cocoa are projected to fare slightly better. Overall, the weighted agricultural commodity price index is expected to be lower in 2015 than in 2005, albeit higher than in 2000 (World Bank, 2006).

³ Sugar and bananas account for over 20% of merchandise exports from a number of Central American and African countries (FAO, 2004). Other than these, no other agricultural export commodities play such a critical role in national economies as those studied here.

Table 3: Commodity Prices and Price Projections in Constant 1990 Dollars

Commodity	Unit	Actual							Projections							% Change Compared with:			
		1970	1980	1990	2000	2005	2006	2007	2008	2010	2015	Mean of 2010 and 2015	1990	2000	2005	Mean of 2000 and 2005			
Beverages																			
Cocoa	c/kg	240.6	330.3	126.7	93.2	143.7	140.3	139.6	140.4	139.8	128.2	133.98	6%	44%	-7%	13%			
Coffee, arabica	c/kg	408.8	439.8	197.2	197.5	236.6	223.6	204.4	193.2	170.2	174.3	172.23	-13%	-13%	-27%	-21%			
Coffee, robusta	c/kg	325.7	411.5	118.2	94.0	104.1	119.5	111.2	107.0	90.0	104.0	97.04	-18%	3%	-7%	-2%			
Tea, auctions (3) average	c/kg	297.7	210.5	205.8	193.1	153.9	170.2	148.3	144.2	142.4	141.5	141.92	-31%	-26%	-8%	-18%			
Fats and oils																			
Coconut oil	\$/mt	1416.0	854.9	336.5	463.4	576.5	543.2	499.7	475.2	428.8	441.1	434.95	29%	-6%	-25%	-16%			
Copra	\$/mt	801.6	574.4	230.7	313.6	386.6	362.2	351.3	352.4	377.3	374.5	375.93	63%	20%	-3%	7%			
Groundnut oil	\$/mt	1349.5	1089.5	963.7	734.4	990.8	823.9	743.8	694.3	681.8	662.5	672.14	-30%	-8%	-32%	-22%			
Palm oil	\$/mt	927.1	740.5	289.8	319.3	394.4	398.4	384.7	384.0	364.5	370.4	367.42	27%	15%	-7%	3%			
Soybean meal	\$/mt	365.7	332.9	200.2	194.7	200.3	185.6	191.9	199.8	188.7	183.3	185.96	-7%	-4%	-7%	-6%			
Soybean oil	\$/mt	1020.8	758.2	447.3	347.9	509.1	507.0	474.5	458.7	394.5	399.5	396.99	-11%	14%	-22%	-7%			
Soybeans	\$/mt	416.8	375.8	246.8	218.0	256.7	238.1	244.2	243.3	231.5	220.6	226.05	-8%	4%	-12%	-5%			
Grains																			
Maize	\$/mt	208.2	158.9	109.3	91.1	92.2	103.2	113.4	104.3	94.3	91.6	92.94	-15%	2%	1%	1%			
Rice, Thailand, 5%	\$/mt	450.3	521.1	270.9	208.3	267.5	280.7	287.8	269.3	231.5	216.4	223.97	-17%	8%	-16%	-6%			
Wheat, US, HRW	\$/mt	195.7	219.1	135.5	117.4	142.3	176.6	191.9	178.1	137.2	133.2	135.19	0%	15%	-5%	4%			
Other food																			
Bananas, US	\$/mt	592.1	478.6	540.9	436.3	563.3	615.7	583.5	571.8	454.5	461.9	458.22	-15%	5%	-19%	-8%			
Beef, US	c/kg	465.0	350.2	256.3	198.8	244.5	226.4	213.7	208.5	188.7	191.4	190.05	-26%	-4%	-22%	-14%			
Oranges	\$/mt	599.1	507.7	531.1	373.8	817.2	724.3	697.8	712.4	703.2	699.1	701.17	32%	88%	-14%	18%			
Shrimp, Mexico	c/kg	n.a.	1,461	1,069	1,557	966	949	925	973	995	1,040	1017.57	-5%	-35%	5%	-19%			
Sugar, world	c/kg	29.32	80.13	27.67	18.6	20.4	29.9	26.2	21.7	18.0	19.1	18.58	-33%	0%	-9%	-5%			
Timber																			
Logs, Malaysia	\$/cum	153.8	248.1	177.2	195.5	189.8	217.3	226.8	234.6	231.5	228.9	230.21	30%	18%	21%	20%			
Sawnwood, Malaysia	\$/cum	623.9	502.4	533.0	612.0	616.1	674.5	667.3	682.0	686.1	724.1	705.07	32%	15%	14%	15%			
Other raw materials																			
Cotton	c/kg	241.1	261.6	181.9	134.0	113.7	113.2	112.4	115.5	120.1	120.7	120.37	-34%	-10%	6%	-3%			
Rubber, RSS1, Singapore	c/kg	145.2	180.7	86.5	68.7	140.3	203.7	182.7	172.4	151.3	146.8	149.02	72%	117%	6%	43%			
Tobacco	\$/mt	3,836	2,887	3,392	3,063	2,606	2,481	2,383	2,367	2,358	2,330	2344.36	-31%	-23%	-10%	-17%			
Fertilizers																			
DAP	\$/mt	192.5	281.9	171.4	158.7	230.8	237.2	222.4	208.5	188.7	166.5	177.56	4%	12%	-23%	-9%			
Phosphate rock	\$/mt	39.2	59.3	40.5	45.0	39.2	40.0	37.5	37.5	36.9	36.6	36.75	-9%	-18%	-6%	-13%			
TSP	\$/mt	153.3	228.7	131.8	141.7	188.3	194.7	174.4	172.0	158.7	137.3	147.99	12%	4%	-21%	-10%			
Urea	\$/mt	n.a.	n.a.	119.3	104.1	204.6	197.4	187.5	184.2	171.5	154.0	162.74	36%	56%	-20%	5%			

Sources: prices obtained from World Bank Commodity Price Data (various issues); projections from World Bank, 2006.

A general observation is that commodity price projections are heavily influenced by demand from Asia and especially China (Mayer and Fajarnes, 2005). The importance of China within world cotton and tobacco consumption has already been commented upon. However, the Chinese drink green tea and very little coffee, so Chinese economic growth does little for demand for (black) tea or coffee.

Demand for Quality

In the previous sections we have highlighted how short-medium term trends in demand vary across commodities. In addition to this, it is important to note trends in the demand for quality, which also vary across commodities. We describe some of these briefly here, then return to the issue of quality in the dedicated section later in this report.

Starting with cocoa, Tollens and Gilbert, 2003 argue that, during the 1990s, the demand for high quality cocoa beans from international grinders fell. This was due in part to new opportunities for bulk transportation of beans to grinding factories⁴ and in part to advances in processing technology that could cost-effectively compensate for lower quality of shipped beans. In Cameroon (the focus of their study), the effects of this fall in demand were a “homogenisation” of exported bean quality, with most now exported as “fair fermented” quality, and a fall in the premium paid for high quality beans.

In the case of coffee, there has been a bifurcation in demand in recent years with the growth of the so-called specialty sector. According to Baffes *et al.*, 2005, the specialty coffee sector now accounts for an estimated 6-8% of global consumption⁵. It emphasises product differentiation, for example organic, gourmet, shade and fair trade coffee, for which wealthy consumers pay significant premia. However, within the majority “conventional” coffee market, technological advances in the roasting of robusta coffee plus the growth in demand for instant and flavoured coffees (which use robusta beans) has increased the demand for low quality, robusta coffee at the expense of arabica⁶. Baffes *et al.*, 2005, therefore, argue that it is demand for lower quality coffee that will be strongest within the “conventional” coffee market. In Table 3 this is reflected in the much lower projected price fall for robusta coffee than for arabica.

The situation in the tea market has some parallels with the case of coffee. In western markets there has been a pronounced shift in recent decades towards “convenience” consumption of tea, with tea bags replacing loose leaves. For many consumers, it is more important that colour and strength are released quickly from the tea bag than that the tea has what a connoisseur would consider to be a fine flavour. Thus, one could say that there has been a fall in the demand for tea quality (Gibbon, 2006a). However, in these markets, there also exists a specialty tea market, which emphasises flavour (including a range of individual origin teas). Moreover, in the faster growing markets of the Middle East and the former Soviet Union, tea is still predominantly brewed using loose leaves. Sri Lankan tea, which is renowned for its flavour, but is not processed in a way that is particularly suited to use in tea bags, has been

⁴ For the greatest cost savings in transportation, beans are carried loose in the hold of ships, where there is no opportunity to separate out beans of different qualities.

⁵ Others think that this share could be higher (see Gibbon, 2006a).

⁶ Ponte, 2002 reports that the premium received by top Kenyan arabicas has fallen in recent years, even though there has been no obvious decline in their quality.

losing market share in markets such as UK and is increasingly dependent on these new markets.

Finally, the cotton case stands as something of a contrast to those reviewed so far. Here, the importance attached to lint quality by international spinners has undoubtedly risen in recent years (Larsen, 2003; Larsen and Poulton, 2005; Estur, 2006). This is because increasingly large and high speed spinning machines are less tolerant of weak or non-uniform lint, whilst in a highly mechanised system foreign matter (especially polypropylene fibres from packing materials) may not be spotted until yarn or fabric is dyed, resulting in price discounts or even rejection of the end product by the buyer. The end result of this is that certain quality attributes (uniformity, freedom from foreign matter and stickiness) have assumed increasing importance in recent years, alongside conventional attributes (staple length, strength, micronaire, colour).

2. *Organisation and Performance of Commodity Sectors*

International Market Structure and Performance

High (and in some cases rising) horizontal concentration at international trader and/or final processor level is an important feature of most commodity systems (Morriset, 1997). However, as Table 4 illustrates, there is still notable variation across our focus crops⁷.

Table 4: Horizontal Concentration in International Markets for Cocoa, Coffee, Cotton and Tea

Commodity	Trading	Processing
Cocoa	3 main grinder-traders; CR3 = 0.8?	Intermediate: 4 main grinders, 3 of which also dominate trading. These 4 grinders also dominate the industrial chocolate market; Final: Manufacture of consumer chocolate also quite concentrated. Grinders have close relationships with the major firms in this market.
Coffee	CR3 = 0.45 (2005)	Within “conventional” market, roasting highly concentrated; multiple “mini-roasters” in specialty sector. Main traders have close links to major roasters.
Cotton	22 “large” traders in 2005, accounting for 38% of world trade	Numerous spinners and textile companies
Tea	Packers buy through brokers at 10 auctions	4 main packers in 2005, of which biggest is believed to have up to 60% market share

Source: Gibbon, 2006a

⁷ Gibbon, 2006a does not cover tobacco, whilst neither Jaffee, 2003 nor FAO, 2003 review the structure of the world tobacco market, despite providing considerable information on production and consumption patterns.

High and rising horizontal concentration at final processor level ultimately drives changes in much of the supply chain. In recent years, international coffee traders have assumed new functions, such as inventory management, that have effectively been outsourced from final processors (Gibbon, 2001). In the cocoa chain, the same function is handled “in house”, as the major processors now also dominate trading. The requirement to guarantee final processors a steady supply of produce from a large number of origins has contributed to increased horizontal concentration amongst international traders. However, increased horizontal concentration has also helped traders maintain their bargaining position with final processors.

According to Gibbon, 2001, the major coffee traders (grinder-traders in the case of cocoa) work closely their roaster clients (consumer chocolate manufacturers in the case of cocoa), whilst remaining independent from them. The requirement to guarantee final processors a steady supply of produce from a large number of origins has, however, driven increased vertical coordination between traders and exporters.

Although there a greater number of both buyers and sellers in the international market for cotton lint, larger traders increasingly aim to be able to provide spinners with reliable supplies of all the types of lint (national origins) that they require for their blends. Thus, increasing vertical coordination between traders and exporters is also a feature of cotton supply chains. Because of the weakness of many exporters and ginners within African cotton systems, plus the growing importance of maintaining lint quality, several international traders have sought in recent years either to develop supply relationships with exporters that involve advancing suppliers’ credit to them or to invest directly in ginning and exporting operations (Larsen and Poulton, 2005). This has undoubtedly contributed to the growth of cotton production in southern and eastern Africa in recent years and is a cause for optimism regarding continued future growth. Its success in raising lint quality is considered later.

Meanwhile, the impact on system performance of horizontal concentration at international trader and/or final processor level is still hotly debated. Morisset, 1997 argued that horizontal concentration at these levels (not fully differentiated in Morisset’s analysis) could reduce traded volumes either through increasing the price of the final product charged to consumers or through depressing the price paid to producers. He estimated a cost to commodity exporting countries of as much as US\$100 billion per year from such practices.

Examining the Swedish coffee market (i.e. roasting) in the light of these claims, Durevall, forthcoming suggests that, although the roasting stage of the chain is fairly concentrated, it performs quite competitively (rivalrously). However, given the highly inelastic consumer demand for coffee⁸, even a small amount of market power can lead to significantly increased spreads between import and retail price. On the other hand, the highly inelastic consumer demand means that, if market power were eliminated and retail prices fell significantly, the impact on the quantity of the unprocessed product demanded (and hence on prices received by exporters and ultimately producers) would be minimal.

At international trader level, a notable feature of trade in many commodities is that it is dominated by (a few) privately owned, i.e. not publicly quoted, companies. The huge working capital required for an international trading operation constitutes a major barrier to new

⁸ See the earlier discussion of demand trends for coffee more generally. Perhaps surprisingly, there has so far been little development of the specialty coffee market in Sweden (Durevall, forthcoming).

entry⁹. At the same time, it is difficult to raise this capital on public markets, because the nature of the commodity trading business is such that there can be several years of meagre or even negative profits (that public capital markets would be profoundly uneasy about)¹⁰, which are then compensated for by occasional years of “windfall” profits, due, for example, to relative global scarcity of the commodity in question.

It is difficult to assess the returns of international trading companies, not only because there are few published accounts, but also because they have to be assessed over whole commodity market cycles for the reason just given. Modest profits in many years, plus the pressure to deliver to final processors, suggest a reasonable degree of competitiveness¹¹. The reported rivalry between older, Western-based trading companies and newer, Asian companies also supports this position. However, international trading oligopolies are clearly also in a position to protect their profit margins over time, such that the bulk of adjustment to declining world commodity prices falls on producers and not on them.

Finally, we note that domestic market liberalisation has enhanced the bargaining power of international traders vis-à-vis producing nations by removing single parastatal sellers, that could in some cases exercise a degree of market power, with multiple exporters, some of which were owned by the international traders. However, whilst this does represent a long-term shift in power relations within the value chain, the immediate consequences for individual producing households were often positive (as noted at the start of this paper), as greater competition – sometimes complemented by the removal or reduction of export taxes - increased the share of the export price that they received (Shepherd and Farolfi, 1999; Akiyama *et al.*, 2001).

With liberalisation now the accepted policy in most “traditional” export crop sectors¹², the new focus of attention in producer-trader power relations is arguably on national commodity auctions.

The Future of Commodity Auctions

National commodity auctions, particularly where it is mandatory to sell crops for export through an auction, stand in the way of the general trend towards vertical coordination and/or integration in liberalised commodity supply chains. For this reason, many auctions are now coming in for criticism from international trading interests, which would like the freedom to operate outside of these auctions¹³. Is maintenance of national commodity auctions a good thing?

⁹ A feature in recent years has, however, been the growth of Asian trading enterprises, such as Olam of Singapore and Tata of India, in competition with older established western-based companies (Gibbon, 2001).

¹⁰ Gibbon, 2001 reports that, “Traders’ main source of profit is volume rather than margins, which are low in most international primary commodity trade” (p351).

¹¹ Gibbon, 2001 argues that, whilst traders sometimes have to trade with each other in order to be able to satisfy the requirements of processors, they also compete vigorously with each other.

¹² Exceptions do still exist, for example the Ghanaian cocoa sector and some Francophone West African cotton sectors. However, even in these cases, there is generally now some incremental process of reform underway that is increasing the space for private participation in commodity export.

¹³ See, for example, John Keells Limited, 2003 for the case of the Colombo tea auction. There have also been big debates in recent years about the future of the coffee auction in Moshi, Tanzania (World Bank / Government of Tanzania, 2004) and of the tobacco auction system in Malawi.

Consistent with the general line developed in this paper, that institutional arrangements must always be analysed in context, without prior ideological biases about the “correct” role for markets or states, the basic answer is that “it depends”!

Auctions are generally associated with crops where following are true¹⁴:

- The product is perishable, so has to be brought to market quickly. An auction can be a useful way of maximising the number of potential buyers for any given consignment when this is the case;
- There is no “terminal” market for the crop to determine basic international prices. (This is possibly related to the perishability issue). Under these circumstances, decentralised auctions are important for price discovery. By contrast, where a “terminal” market exists, export prices are often set with reference to prices prevailing in the “terminal” market, minus appropriate transport and other costs;
- There are important “within grade” quality differentials. In this case, the auction arrangements (e.g. tasting of samples prior to auction day in the Colombo tea auction) permit not just price discovery, but also quality discovery.

Table 5 summarises the relevant attributes for our focus commodities and shows how they are related to the existence of auctions.

Table 5: Commodity Attributes and Incidence of Auction Systems

	Terminal Market	Perishable	Within-Grade Differentials	Auction	Direct Sales Systems
Tea	No	Yes	Yes	Colombo, Mombasa, India (6), Jakarta, Malawi	Limited direct sales outside auctions ¹⁵
Coffee	LIFFE, NYBT	No	Yes	Tanzania, Kenya	Common
Tobacco	No	Yes	Yes	Malawi, Zimbabwe	Brazil, Tanzania, Mozambique and others
Cotton	NYBT	No	Yes	Indian state level	All African
Cocoa	NYBT	No	No	-	All

Notes: NYBT = New York Board of Trade. LIFFE = London International Financial Futures and Options Exchange. In the case of coffee, NYBT is pre-eminent in arabica, whilst LIFFE handles robusta.

Where associated market structures work well, auctions can both reward quality and generate information about the quality preferences of buyers that producers can learn from and respond to. Ponte, 2002 thus claims that international coffee traders are supportive of the continuation of the auction system for Kenyan coffee, which has a special place in the world market due to its strong taste and often high quality. However, in other places, auctions are under fire for a mix of reasons. Discerning which reasons are the driving ones and which criticisms can be

¹⁴ Several of these insights were derived from a conversation with John Baffes.

¹⁵ The market share of direct tea contracts is restricted by law in Sri Lanka, Kenya and India (Gibbon, 2006a).

addressed by changes to the market structures surrounding the auction is critical to deciding the future of any given auction system.

Auctions may be inefficient in their price discovery function if the number of buyers is limited. Thus, the number of buyers at the tobacco auction in Lilongwe has declined over the years (due to increasing concentration in the international trade in tobacco?), such that there are now only three major buyers. This is insufficient to generate strong competition. There are allegations that buyers share the market amongst themselves (Jaffee, 2003). Similarly, when international coffee traders integrated backwards into coffee buying and exporting from Tanzania post-liberalisation, much of the coffee brought to the (mandatory) Moshi coffee auction was effectively sold and bought by the same company. The main buyers agreed not to compete seriously for each others' "captive" coffee (Ponte, 2002).

Weaknesses in market structures surrounding an auction may impede the transmission of incentives and information from that auction to producers and/or undermine their ability to respond to them. In Malawi, the system of (non-competitive) "designated buyers" for tobacco leaf at village level is ineffective in transmitting either quality incentives or information on quality requirements to smallholder burley producers, whilst terribly underdeveloped rural financial markets prevent many producers from affording the inputs necessary to produce higher quality leaf. By contrast, the competitive "intermediate buyer" system that was replaced by the "designated buyers" had greater potential in these regards. Unfortunately, it was seen as undermining the sharecropping arrangements in place on the country's large-scale burley estates, through encouraging side-selling of leaf, hence the decision to replace it (Jaffee, 2003). Prior to the relaxation on the rules governing burley production in the 1980s and 1990s, the Malawi auction system was considered a very effective way of communicating buyers' quality preferences to the large-scale estate growers that produced the country's tobacco.

A combination of an auction-based system, that discourages vertical backwards integration by international traders into domestic marketing and production activities, and weaknesses in domestic financial systems may not only prevent producers from accessing inputs. It may also reduce the level of competition between local traders for available produce, given that suppliers' credit is a major form of finance for such traders (Shepherd and Farolfi, 1999). This in turn also impedes the transmission of quality incentives from auctions to producers by both reducing overall price transmission and causing traders to prioritise volume of purchases (and turnover of capital) over attention to quality. This is an issue that we return to in a later section.

Auction systems involve direct costs for participants, in terms of fees to fund the running of the auction, the cost of maintaining a presence at an auction and the necessity of dealing in numerous, often small, consignments. Jaffee, 2003 argues that the fees charged by Auction Holdings Limited in Malawi are unjustifiably high. The cost of maintaining a presence at an auction and the necessity of dealing in numerous, often small, consignments seem to wrangle in the case of Sri Lankan tea (D.Kasturiratne, *pers.comm.*).

Finally, if international demand for commodity quality is falling, traders may see less value in a system that is structured in part to discover and reward quality.

There may, therefore, be a number of reasons why an auction-based system does not work well for either producers or traders. International traders, under pressure from their own

clients, may thus claim that an auction cannot guarantee them sufficient supplies of produce of the desired type or quality¹⁶ and that it does not justify the costs entailed (i.e. the fees). They argue that a move to direct sourcing, including greater vertical coordination with local traders and/or investment in contract farming, would enable them to invest directly in the local production base, so as to shift the supply curve outwards to realise the desired quantities and qualities of produce.

However, there is also a market power issue involved. Auctions explicitly seek to maximise competition between buyers for available produce. Especially where a crop variety or quality is in high demand on the world market or in times of product scarcity, auctions thereby enhance returns to producers. Under contract farming, there are few or no windfalls for producers, even in seasons of shortage¹⁷.

As the number of countries producing particular commodities increases (with expansion in production in places such as Brazil and Vietnam), the balance of power in international markets is tilting further towards traders and against producing countries. Traders might, therefore, look to source elsewhere if they dislike the institutional arrangements within a particular country. Thus, although Jaffee, 2003 reports that Brazilian burley tobacco is only presently a partial substitute for Malawian (which is valued for its low nicotine levels), buyers may increasingly source from Brazil as a way of exerting leverage over Malawi to discontinue its auction system. In the case of tea, the fact that most major markets are auctions may make it easier for governments to resist calls to relax restrictions on direct sales outside of auctions.

To summarise, there are undoubtedly good reasons why traders are dissatisfied with the functioning of some national commodity auctions. These reasons may be related to the auctions themselves (e.g. costs) or to the performance of the local market structures surrounding the auction. Allowing an auction system to give way to greater vertical coordination within private commodity chains may be a pragmatic solution in some contexts, but national policy makers should see whether traders' grounds for dissatisfaction can be addressed by other measures first. Where international market conditions are also conducive¹⁸, a well functioning auction system can be an important component of a strategy to externally differentiate and domestically maintain national crop production as high quality (Ponte, 2002; John Keells Limited, 2003). It also preserves an element of a suppliers' market that increases the share of returns captured by producers, rather than traders.

A Typology for Commodity Sectors?

The terms of reference for this assignment requested a typology of commodity systems that might be helpful in explaining performance trends across commodities. It was suggested that this might be based on, for example, more or less vertically integrated systems. However, as explained earlier, increasing vertical coordination (if not integration) is a feature in all major commodities, including cotton and coffee (in Africa, at least), as international traders seek to access to reliable volumes of good/high quality produce.

¹⁶ Note that the desired quality may not be the highest quality.

¹⁷ Note that these are believed to be the times when international traders also reap the majority of their profits.

¹⁸ Ponte, 2002 suggests that the position of Kenyan coffee in the world market is conducive to the maintenance of an auction system, whereas the reputation of much Tanzanian coffee as a filler is not.

The observation of the current author is that two main sets of factors shape the organisation of commodity sectors at national level and that organisation in turn influences performance. The two main sets of factors are commodity and market characteristics on the one hand and policy decisions (past and present) on the other. Under the heading of commodity and market characteristics we may consider the following:

- Whether available quality premia are high or low. (Amongst our focus commodities, we suggest that they are relatively low for cocoa and cotton, higher for tobacco, coffee and tea);
- The perishability of the commodity. (As noted earlier, this is one determinant of whether auction systems are likely to be observed);
- The size of seasonal input requirements in production. (Amongst our focus commodities, we suggest that these are relatively low for cocoa, medium for coffee and tea, and high for cotton and tobacco). It will be shown below how responses to the challenge of providing input credit help shape cotton sectors in Africa.

However, within given commodities, there are also important differences in sectoral structure across countries, which are a result of history and/or policy. Thus, we might compare:

- West African cotton systems that are still heavily regulated to ensure both vertical and horizontal coordination, with the range of sectoral models that have emerged post-liberalisation in southern and eastern Africa (Poulton *et al.*, 2004);
- Coffee and tobacco sectors with and without auctions (Table 5).

In later sections, therefore, we seek to explain how different forms of sector organisation affect performance, but do not produce a typology as such.

Agricultural Commodities and Development

As noted in Table 2, some of the world's poorest countries are heavily dependent for export revenue on one or a small number of agricultural commodities. These are amongst the few products that these countries have successfully produced for international markets, but their prices have been steadily falling over time and are continuing to fall. *Ceteris paribus*, the ability of export commodity sectors to contribute to national growth and poverty reduction goals also falls. Moreover, efforts to increase productivity and hence production, whilst perhaps generating short-term benefits for the country concerned, only contribute further to the long-term downward pressure on international prices. As a result, many poor countries, especially in Sub-Saharan Africa, Central America and the Caribbean, appear trapped in their dependency upon commodities

Nevertheless, Mayer and Fajarnes, 2005 argue that, on historical evidence, most countries in Sub-Saharan Africa and Latin America should expect to continue to depend quite heavily upon agricultural and/or mineral exports for some time, even if they are successful in raising national income levels. They show that basic resource endowments (land and mineral resources, education level of the labour force) continue to explain export composition across country groups fairly well. Many countries in Sub-Saharan Africa and Latin America are relatively land-abundant, but low in human capital. Some developed economies (e.g. Australia, New Zealand, USA), plus a few "exceptional" Asian countries, such as Thailand and Vietnam, are also land-abundant and this is reflected in the importance of agricultural products in their exports. By contrast, much of Asia land- and natural resource-scarce.

It is also important to note the “paradox” that, whilst many poor countries appear trapped in dependency upon commodities, other (often less poor) countries have rapidly expanded commodity production and used commodity exports as a tool to assist their development. Brazil is the most prominent example of this latter group, which also includes Argentina, Malaysia, Thailand and, most recently, Vietnam (Gibbon, 2006b). According to FAOSTAT, Brazil’s agricultural and food exports averaged US\$ 9,690M p.a. during 1990-94 (little changed since 1980-84), but rose to US\$ 14,546M p.a. during 1995-99 and US\$ 18,778M p.a. during 2000-04. In other words, they doubled in 10 years, despite falls in the unit costs of many commodities. Brazil is now one of the major exporters of beef, orange juice, chicken, coffee, soyabeans, sugar, tobacco and cotton, amongst other products. Interestingly, in general, its market position owes more to low production costs than to high quality.

By contrast, Poulton *et al.*, 2006 suggest that, with few exceptions, African countries have only sustained success in agricultural exports where:

- they have inherent agro-ecological advantages in producing a particular crop, and/or
- the production or processing of the crop has elements that are highly labour intensive and difficult to substitute with mechanisation¹⁹.

In the former case, this amounts to natural protection. In the latter case, “competitiveness” may exploit low labour costs as much as contributing to raise wages and incomes. Indeed, there is what Hans Binswanger²⁰ describes as a commodity treadmill, whereby the most productive (lowest cost or highest quality) producers can reap significant gains from commodity production, but those with lower productivity simply struggle to stay in the market as prices fall, reaping few benefits in terms of rising producer incomes or poverty reduction more generally. This would appear to be a partial explanation for the findings of Wodon *et al.*, 2006 that poverty is highest in those parts of Mali where cotton production occurs²¹.

Poulton *et al.*, 2006 also note that sustained success in SSA agricultural exports has only been achieved in medium-high value products. In these cases, the advantages either from inherent agro-ecological advantages or low costs of (high) labour inputs are sufficient to offset the generally higher costs of transportation, purchased inputs, finance etc suffered by African producers compared with competitors in other parts of the world.

ODI, 1995 argue that, faced with commodity price declines and volatility, low income, commodity-dependent economies face four options:

- beating the market by raising productivity and lowering costs in their main commodity sectors;
- horizontal diversification into commodity sectors facing more buoyant demand conditions (see earlier sections);
- adding value to primary production by processing prior to export. (Gibbon, 2001 sets out some of the constraints and challenges to this option);

¹⁹ One exception to these generalisations is Kenyan horticulture, although this does benefit from relative proximity to major European markets and is still quite labour-intensive. A sector in which neither of the above conditions hold and which has gradually seen its position in the world market eroded over the past 30 years is the groundnut sector in Senegal.

²⁰ Elmhirst Lecture to the 2006 conference of the International Association of Agricultural Economists, Gold Coast, Australia, 12/08/2006.

²¹ There are also questions about the data on which this is based. For example, one of the surveys was conducted the year after a strike by Malian cotton producers cut national production in half.

- “diversifying on the basis of an aggressive promotion of outward-oriented industrialisation”.

Whilst the fourth option is perhaps the ultimate goal and option two may have immediate attractions²², the first option is likely to be part of most national strategies, not least because it can generate revenue to fund the others. The national competitiveness strategy for a sector will depend in part on the commodity in question (how important are quality differences?) and in part on the intrinsic characteristics of local varieties (do they have quality characteristics that are particularly valued by international buyers?). This will influence the amount of emphasis placed on product differentiation as opposed to cost minimisation. However, both are likely to be important to some degree. Thus, the key elements of a strategy for increased productivity and competitiveness are likely to be:

- ongoing investments in (commodity-specific) research and development;
- ongoing investments in infrastructure, especially roads and port facilities;
- evolution of locally appropriate institutional arrangements to enable producers to access new seed (and other) technology, fertilisers and crop protection chemicals and to reduce the cost of achieving higher quality produce;
- sound macro-economic management, especially careful management of the real exchange rate.

A critical point is not to abandon existing primary commodity exports in the name of diversification. It is easier to diversify from a position of strength (buoyant revenues for reinvestment) than of weakness. Moreover, many of the factors that currently hinder agricultural export performance (e.g. poor road and port infrastructure, high cost of finance, overvalued exchange rates) will also hinder efforts at diversification. These, therefore, need to be addressed anyway.

Finally, however, we note the careful balance that has to be struck in investing in commodity sectors. A major reason for improving the competitiveness of cash crop sectors is that they then generate surpluses that can fund equally important investment in food crop intensification, health, education etc. As far as possible, therefore, public investment in cash crop sectors should be funded out of revenues generated within the sector, e.g. through levies to pay for ongoing research programmes. Moreover, the sectors should provide some degree of net taxation revenue to the remainder of the economy. At the same time, the level of taxation should not be so high – as it was in many pre-liberalisation sectors – as to discourage private investments by farmers in raising farm-level productivity. This balance becomes ever more difficult to achieve as commodity prices fall. Several West African cotton sectors, that were once seen as engines of national growth, have recently become the recipients of domestic subsidies²³. However, it is vital for national development that it is achieved.

Looking at the elements of a national competitiveness strategy outlined above, we note that the balance of responsibility for delivering on these varies by element. Thus:

- maintenance of a competitive exchange rate is generally the responsibility of the national government - an important exception being the FCFA zone in West Africa, home to Africa’s leading cotton producing nations;

²² Brazil has been spectacularly successful in both options one and two.

²³ This owes as much to the overvaluation of the FCFA as to the effect of subsidies in the US, EU and China.

- infrastructure investment is also generally the responsibility of the national (or other relevant, e.g. state) government. However, some investments (e.g. bulk grain handling facilities at ports) are more sector-specific than others (e.g. roads). Sector- or commodity-specific investments might be undertaken by sector stakeholders collectively or by large firms individually, perhaps within some form of public-private partnership arrangement;
- agricultural research and development is often thought of as a fairly pure public good. However, where agricultural research budgets are under strain, expenditure on export cash crops may receive lower priority than research into major food crops. Hence, responsibility for organising and funding research efforts may fall upon the sector stakeholders;
- evolution of locally appropriate institutional arrangements to enable producers to access new seed technology, fertilisers and crop protection chemicals and to reduce the cost of achieving higher quality produce is the responsibility of sector stakeholders.

In the following two sections, we examine how liberalised cash crop sectors, particularly in Africa, have responded to the challenges of maintaining (or improving) product quality and of supplying input to smallholder producers. This leads into final reflections on how system organisation affects overall performance.

3. *Market Liberalisation and Crop Quality*

Early reviews of the impact of liberalisation on export crops, for example Shepherd and Farolfi, 1999 for Africa, highlighted declines in crop quality as one of the major challenges thrown up by export crop liberalisation. However, Tollens and Gilbert, 2003 (and associated work by the same authors) provided a counter-analysis. Although focusing specifically on the case of cocoa in Cameroon, this paper makes more general claims about commodity markets and quality and has been influential in recent World Bank thinking. Here, therefore, we consider the arguments advanced by Tollens and Gilbert, 2003 that:

- market liberalisation was more likely to raise crop quality than to reduce it, and that
- declines in quality observed around the time of liberalisation could be attributed to changes in demand for product quality on international markets, which pre-liberalisation marketing boards had failed to respond to²⁴, rather than to failures in the quality performance of post-liberalisation domestic marketing systems²⁵.

Tollens and Gilbert's Model for Cocoa Quality in Cameroon

Figure 1 is a reproduction of two out of three graphs presented by Tollens and Gilbert, 2003. The left-hand panel shows demand for, and supply of, quality cocoa beans on the international market. In the simplified form presented graphically, there are just two qualities of bean: fair fermented (normal) and good fermented (high quality). As noted earlier, a major contention of Tollens and Gilbert, 2003 is that, during the 1990s, the demand for high quality cocoa beans

²⁴ Tollens and Gilbert, 2003 assert that, "if export quality does fall following a market liberalisation, this would indicate that the state marketing organisation had previously insisted on too high a quality level, effectively generating a subsidy from producers, who were consuming resources in reaching these quality levels, to consumers, who were not paying the full cost of the quality level they were purchasing" (p305).

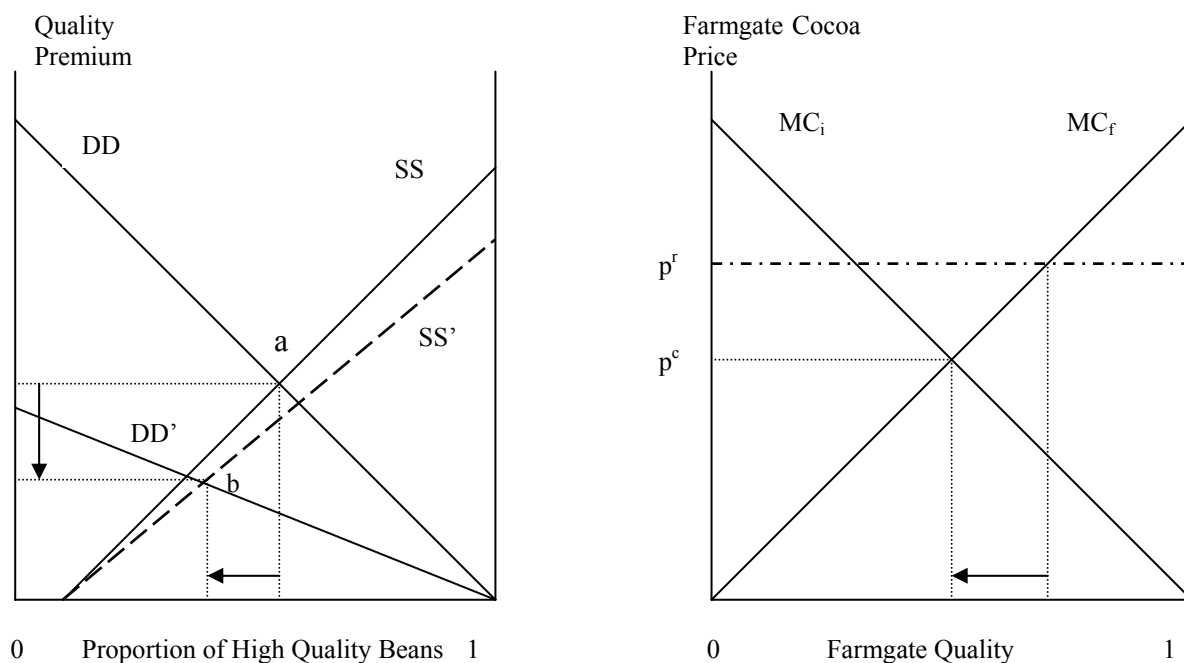
²⁵ Tollens and Gilbert, 2003 do recognise exceptions to this, most notably the case of totally unplanned liberalisation of the cocoa market in Nigeria in 1986, but argue that in these cases distortions elsewhere in the economy affected behavioural incentives at the time of sector liberalisation.

from international grinders (three of which dominate cocoa export from Cameroon) fell. The effects of this fall in demand were a “homogenisation” of exported bean quality, with most now exported as “fair fermented” quality, and a fall in the premium paid for high quality beans.

Tollens and Gilbert, 2003 contend that the most likely impact of cocoa market liberalisation would have been an improvement in quality, represented in the left-hand panel by a shift in the supply curve from SS to SS' . We return to this shortly. However, for now we note that, given the fall in demand for high quality beans, a fall in the proportion of beans exported as “good fermented” and a fall in the quality premium might be observed with either:

- an improvement in quality supplied as a result of liberalisation, as shown in the left-hand panel (with market equilibrium shifting from a to b during the period in question), or
- a fall in quality supplied as a result of liberalisation (which would tend to reduce the proportion of high quality beans supplied, but raise the premium), but one that was dominated by the effect of the fall in demand for quality, such that the quality premium fell.

Figure 1: Tollens and Gilbert’s Model for Cocoa Quality in Cameroon



Source: Tollens and Gilbert, 2003

Meanwhile, the right-hand panel shows the market for quality at the farmgate. The conceptual link to the left-hand panel is that the two marginal cost curves are derived from total cost curves showing how much it would cost for farmers (MC_f) or market intermediaries (MC_i) to deliver the quantity of “good fermented” beans desired by the international market (determined in the left-hand panel). The socially efficient (least cost) way of delivering this quantity is provided by the intersection of MC_f and MC_i , i.e. with farmers and market intermediaries both undertaking some processing.

Here we need to note an important assumption about cocoa quality underlying this analysis. This is that bean quality is determined largely by activities that take place after harvesting of the cocoa beans, namely fermentation and subsequent drying. These activities can, therefore, be undertaken by either farmers or market intermediaries.

Tollens and Gilbert, 2003 hypothesise that farmers have a competitive advantage in fermentation, but that traders may be better placed to undertake drying (often done at port prior to export). However, this may be questioned. Thus, Peter Gibbon [*pers.comm.*] notes that the labour intensiveness and economies of scale, such as they are, are the same for both activities. Citing experience in Uganda, he notes that the majority of beans are either fermented and dried by farmers or fermented and dried by traders. Traders typically do some extra drying after purchase, but this is not necessary where farmers do it properly, which they do if they receive a decent price premium (i.e. for organic cocoa). Below we return to the observation that it is the care and/or thoroughness with which farmers perform particular operations – rather than whether or not they perform them – that is key to commodity quality.

Prior to market liberalisation in Cameroon, the monopoly state-run buying system demanded certain quality standards of cocoa beans sold by farmers. Tollens and Gilbert, 2003 contend that, with the fall in international demand for cocoa bean quality, these standards (rewarded by price p_r) were now sub-optimally high. Hence, following liberalisation, the price paid to producers for high quality cocoa beans fell (to p_c). As a result, more processing was undertaken by traders, with less being undertaken by farmers. This, Tollens and Gilbert, 2003 argue, was a socially efficient outcome.

Returning to the left-hand panel, the lower total processing cost - implied by moving to the intersection of MC_f and MC_i in the right-hand panel – translates into the lower cost of supplying cocoa quality (SS').

Tollens and Gilbert, 2003 provide the following pieces of evidence to support their case:

- evidence of a fall in the proportion of beans exported as “fair fermented” quality over the 1990/91 to 1992/93 period, i.e. just before liberalisation (1994);
- econometric evidence that the price premium received by Cameroonian cocoa has not declined relative to that of neighbouring countries, e.g. Côte d’Ivoire and Ghana, that have followed a different liberalisation schedule;
- anecdotal reports that cocoa beans are now generally purchased in a less processed state than they were prior to liberalisation.

Together, the first two provide compelling evidence (corroborated by accounts of technological change in the sector) that it is changes in international demand that have driven changes in the composition and price of Cameroonian cocoa exports, not the effects of domestic liberalisation. However, even in combination with the third, they are insufficient to substantiate claims that changes in the farmgate quality of cocoa post-liberalisation are socially efficient.

Thus, whilst not asserting that this *is* true for cocoa in Cameroon, we note that the following alternative scenario (similar to cocoa marketing liberalisation in Nigeria) would still be consistent with the three pieces of evidence martialled by Tollens and Gilbert, 2003, so long as international market effects dominate domestic market effects in terms of final quality outcome:

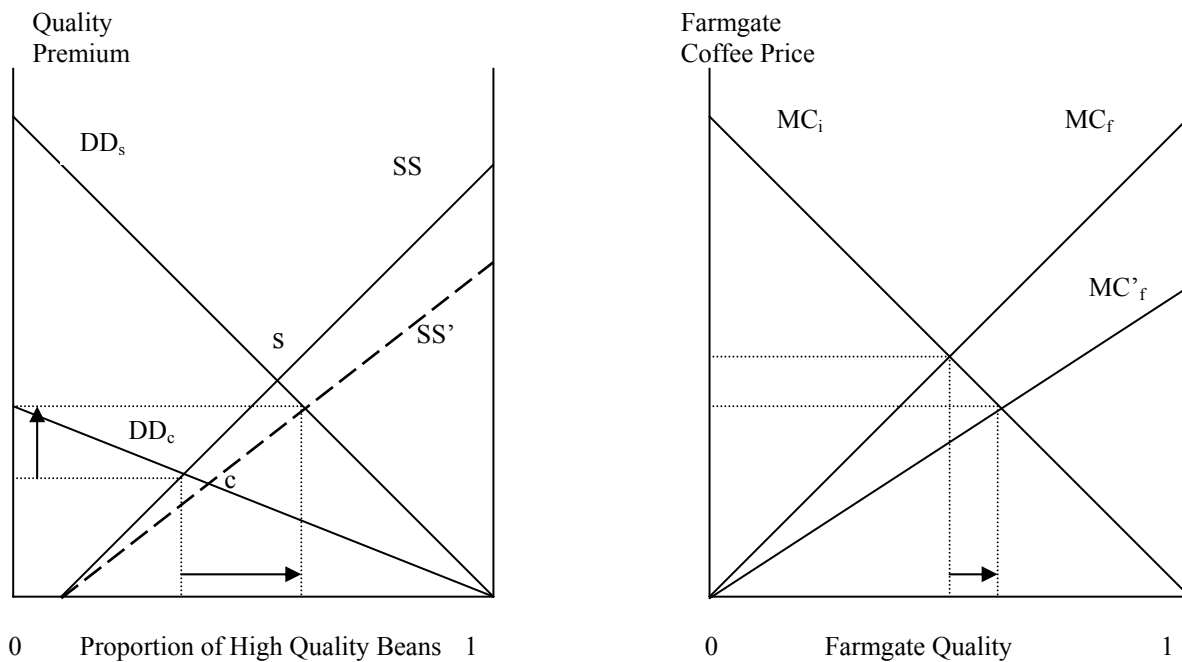
- a scramble for cocoa beans by multiple intermediary traders post-liberalisation led to the collapse in premia for higher quality cocoa;
- farmgate quality was thus reduced, as farmers had no incentive to carry out anything more than the minimum level of processing effort;
- instead of the post-liberalisation equilibrium being at the intersection of MC_f and MC_i , it is thus at a point where traders are forced to carry out a sub-optimally high degree of processing because farmgate processing has collapsed.

Coffee in Tanzania

To demonstrate the wider applicability of the framework presented by Tollens and Gilbert, 2003, we apply it to recent developments within the Tanzanian coffee sector. This provides an interesting comparator both with the case of Cameroon cocoa just discussed and the experience of Sub-Saharan African cotton sectors that we shall consider afterwards.

As noted earlier, there has been a bifurcation in demand for coffee in recent years, with strong demand for high quality coffee within the so-called specialty market, but a fall in the demand for coffee quality within the “conventional” coffee market due to technological advances in the roasting of robusta coffee plus the growth in demand for instant and flavoured coffees (which use robusta beans). In terms of the left-hand panel of Figure 2, the demand for quality in the conventional market (DD_c) has shifted downwards in recent years (much as demand for quality in the international cocoa market has), but at the same time the specialty segment has emerged with a much stronger demand for quality (DD_s).

Figure 2: The Tollens and Gilbert Model Applied to Coffee in Tanzania



With the sharp fall in the world price of coffee, as a result primarily of increased production in Vietnam and Brazil, the prospects for Tanzanian producers making enough money in the conventional coffee market to make a significant contribution to poverty reduction are slim. According to Ponte, 2002, in comparison with neighbouring Kenya, Tanzania has not traditionally been viewed as a source of high quality coffee. However, some Tanzanian coffee varieties are potentially of high quality, even if that quality has often not been realised due to poor processing and marketing practices. Therefore, for the past few years Technoserve has been working to transform sections of the Tanzania coffee sector into suppliers of high quality, specialty coffee²⁶. They have supported the development of a farmer-owned company, KILICAFE, that provides support services to smallholder coffee growers and that markets coffee both on the Moshi auction and direct to international buyers of specialty coffee, such as Peets and Starbucks. In addition to the establishment of KILICAFE as a service provision and marketing company, a central plank of Technoserve's programme has been the introduction of so-called central pulper units (CPUs) for the processing of coffee cherries. With the additional quality achieved by the CPUs and the access to higher value markets achieved through KILICAFE, farmers who sell through the new marketing channel are able to realise prices 60% higher than those realised by their neighbours who sell to competing market traders.

The CPUs are owned and controlled by farmer groups affiliated to KILICAFE. Although their capital cost is large relative to the incomes of individual group members, in terms of the right-hand panel of Figure 2, they have led to a downward shift in MC_f and an increase in quality of coffee supplied by the farmers in question. In the left-hand panel of Figure 2, there has been a shift in the supply curve for coffee quality to SS' . However, because KILICAFE has also succeeded in accessing marketing channels for specialty coffee²⁷, the net result has been a move from point c to point s and hence the significantly higher prices obtained by participating farmers.

In terms of wider debates, this may be seen as an example of liberalisation creating the opportunity for smallholder cash crop producers to supply a higher quality product. In this wider context, however, it is also important to note that Technoserve is a non-profit organisation that has obtained significant donor funding for its work. To enable smallholder coffee producers to access new market opportunities, its excellent programme has provided them with a coordinated package of new technology, the technical information to use it effectively and the finance to invest in it, plus assistance in forming groups and establishing new market linkages (i.e. going beyond the mere provision of market information). A broader lesson from this case might, therefore, be that such coordinated service provision is necessary if producers are to be assisted to access new market opportunities post-liberalisation. There is no evidence from this case that private markets alone would deliver this package of support services.

It is also important to note that, whilst the number of CPUs in use in Tanzania is now growing quite rapidly, it is still only a minority of Tanzania's coffee producers who grow coffee that can access specialty markets. Given the still modest share of specialty coffee in total world consumption, arguably it is not possible for all producers to follow this route to increased

²⁶ See www.technoserve.org/news/TZCoffeeSectorBrief.pdf for a brief report on this. The author visited Technoserve to discuss this work in 2005 during an assignment for FARM-Africa.

²⁷ The increase in quality achieved through the introduction in CPUs has been a prerequisite for this. However, the reliability of supply and contracting provided by KILICAFE, initially "guaranteed" by Technoserve's support for KILICAFE, is also an important part of the story.

incomes. The experience of the farmers with whom Technoserve is working suggests that it is in the interests of those who can raise quality and access specialty markets to do so. However, it is also instructive to consider the post-liberalisation quality experience of the majority of Tanzanian producers who are not linked to the Technoserve programme.

Until the late 1980s, the cooperative societies and unions that controlled the marketing of coffee in Tanzania operated a system that provided clear incentives to producers to supply reasonable quality coffee. Village-level cooperative societies provided inputs on credit to some producers. This enabled them to protect their coffee trees against disease, assisting quality. Equally importantly, the fact that cooperative societies had a local monopoly on coffee marketing meant that each society could send a reasonable volume of parchment to the union-controlled curing factories. These volumes were large enough to make it worthwhile operating a system of identity preservation, which in turn underpinned a two-stage payment system, whereby producers received an initial payment at the time of coffee marketing, followed by a second payment based on the price at which their coffee was actually sold at auction.

During 1989-93 the entire cooperative marketing system began to collapse under the strain of financial deficits (ultimately attributable to inefficient management). As part of this, second payments became more and more delayed and/or were abandoned altogether, such that the incentive for producers to supply good quality parchment declined. Winter-Nelson and Temu, 2002 note that, “the average quality of Tanzanian coffee has been declining since well before market liberalisation” (p570). Liberalisation in 1994-95 was effectively forced on the government by the decline in performance of the cooperative system.

However, whilst greatly reducing marketing margins (Winter-Nelson and Temu, 2002) and speeding payments to producers, the effect of liberalisation on coffee quality is unclear. On the one hand, private companies have invested in new curing factories that yield higher grade cured coffee than older cooperative equipment from similar parchment. Faster processing also enhances freshness (Winter-Nelson and Temu, 2002). On the other hand, the dual payment system has disappeared altogether and it is unclear (at least from the secondary sources consulted for this report) what has happened to input use. Moreover, Ponte, 2002 notes that some private buyers of parchment are more interested in quick turnover of capital than quality. This results in them buying parchment that has not been properly dried. As producers receive a single price for their parchment from such traders, irrespective of its quality, there are no incentives to undertake thorough processing.

Ponte, 2002 reports that the price of Tanzanian mild arabicas has declined (over an unspecified period) relative to Colombian coffees, for which Tanzanian mild arabicas are a substitute. This indicates that there is a quality problem within the Tanzanian domestic system (albeit one that began prior to liberalisation), in addition to wider demand trends in the international market.

Finally, Ponte, 2002 also suggests that Tanzania’s poor quality reputation reduces the incentives faced by individual traders to reward producers who supply high quality parchment. If international traders seek Tanzanian coffee primarily as a filler for roasters’ various blends, then they will not pay high premia even when quality is good, as cheaper filler could then be sourced from elsewhere. Only once the sector as a whole gains a good quality reputation will it attract buyers who are ready to pay good premia for its best consignments. A

concerted national push may be required to change buyers' perceptions, something that liberalized sectors with numerous players can find difficult to achieve²⁸.

Experience with Cotton Quality

Experience with African cotton market liberalisation in southern and eastern Africa provides a striking and informative contrast to both the Cameroon cocoa case presented by Tollens and Gilbert, 2003 and the Technoserve coffee case in Tanzania. However, it reinforces some of the observations just made regarding quality in the non-specialty coffee market in Tanzania.

In terms of market and technical conditions, there are two major differences with the cocoa case. Firstly, as noted earlier, the importance attached to lint quality by international spinners has undoubtedly risen in recent years (Larsen, 2003; Larsen and Poulton, 2005; Estur, 2006). In other words, in the left-hand panel of Figure 1, the DD curve has not shifted downwards and may have shifted upwards²⁹.

Secondly, in the case of cotton, the critical control point in the marketing chain as far as quality is concerned is the point of primary marketing. Traditional fibre properties are partially ensured by use of good quality seed and effective application of crop protection chemicals. Stickiness is caused by honeydew deposits on the cotton bolls in the field, whilst immature bolls, which tend to produce weak fibres, are the result of poorly motivated or supervised pickers. None of these quality "losses" can be recovered at later stages of the marketing chain. Most contamination of lint by foreign matter also originates prior to primary marketing. Thus, contamination from polypropylene fibres most commonly occurs through use of inappropriate bags for transporting seed cotton from the field to the point of primary marketing. Where quality control is particularly weak, seed cotton may also be deliberately adulterated by farmers prior to sale, so as to add weight.

Farmers, therefore, need to be given clear incentives – most notably through grading of seed cotton and differential payment by grade – to adhere to good quality practice. After seed cotton has been purchased, company staff can and often do undertake further sorting of seed cotton prior to ginning. A high quality model, such as Cottco's in Zimbabwe during the 1990s, requires *both* good farmer practice up until the point of primary marketing *and* further sorting prior to ginning to achieve high uniformity within individual consignments of lint³⁰. Thus, in terms of the right-hand panel of Figure 1, there is still an optimal balance to be struck between effort by farmers and company. However, whilst companies can also employ staff effectively to make up for some bad quality practice by farmers (most notably in relation to

²⁸ Winter-Nelson and Temu, 2002 observe that, whilst at the time of writing there were numerous parchment buyers and coffee exporters active in Tanzania, five vertically integrated firms controlled 60% of both markets. They also note two sector coordinating mechanisms that could, in theory, have helped achieve such a concerted push. However, such a push does not appear to have occurred.

²⁹ It may be that premia over the benchmark Cotlook A index have not risen for "acceptable" quality cottons, but that discounts have increased for national origins that gain a reputation for non-uniformity, presence of foreign matter etc. Such discounts may be partially observed in contract prices for cotton lint, but may also only materialise once lint has been delivered and buyers make claims for unacceptable presence of foreign matter etc.

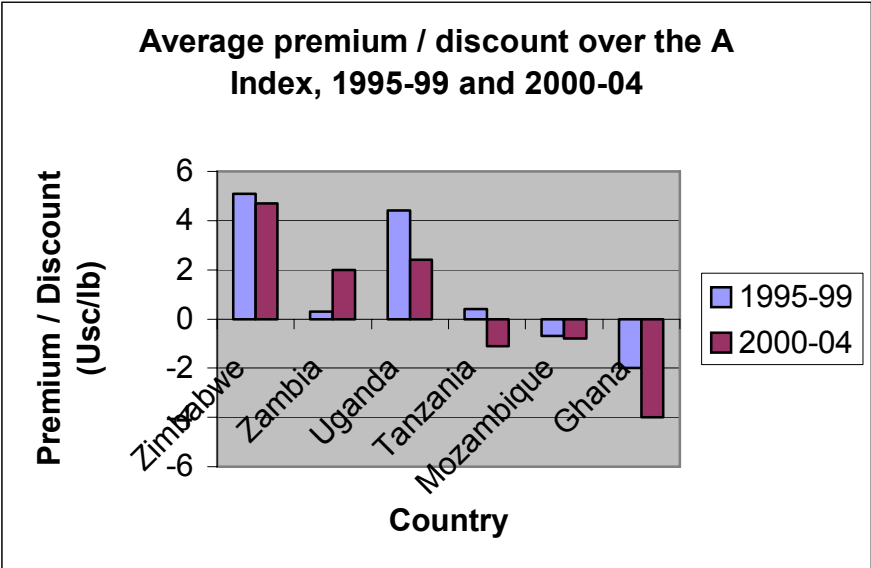
³⁰ Cottco classed their lint into 40 grades, from which buyers could select, whereas seed cotton was bought on the basis of "only" four grades.

foreign matter)³¹, this does not represent an optimal allocation of effort between farmer and company, nor can it be as effective in maintaining quality as incentivising farmers to undertake good quality practice in the first place.

Given that demand for quality from international spinners has risen in recent years, the Gilbert and Tollens model would predict increases in quality at both export and farm-gate level, if markets for quality indeed work well. Figures 3 and 4, both of which are so-far unpublished surveys of prices paid for African lints in recent years, show that the actual story is much more complicated than this. Amongst the liberalised cotton sectors of southern and eastern Africa, the quality premium enjoyed by Zambian lint has risen in recent years, but the premia attached to Tanzanian and Ugandan lint and, more recently, Zimbabwean lint have all fallen. In Mozambique two opposing trends have been seen (Tschirley *et al.*, 2005). In the traditional cotton heartlands of Nampula, quality is low and either static or declining. By contrast, in the newer concession areas to the south and east of Nampula, newer entrants to the sector have achieved slightly higher (and rising) quality.

Figure 3 is taken from a survey of 13 international buyers of African lint conducted during late 2004 – early 2005 (Larsen and Poulton, 2005). The premia and discounts shown in Figure 3 are only ballpark figures, as the traders surveyed were asked to provide *average* premia or discounts for the specified national origins over the two periods. Nevertheless, the patterns are very similar to those observed in Figure 4.

Figure 3

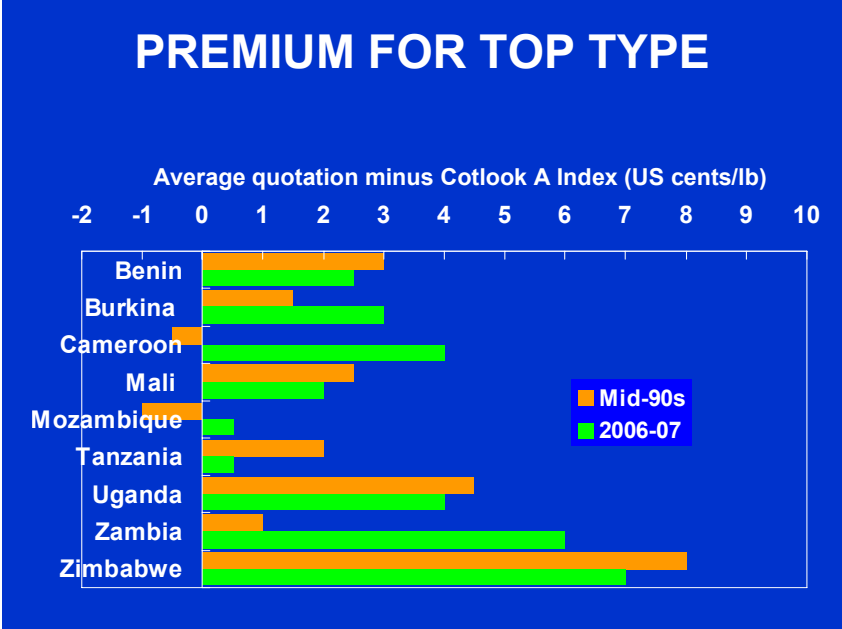


Source: Larsen and Poulton, 2005

³¹ In Zambia Dunavant employed whole teams of people at their buying posts to look for polypropylene, which is considered one of the hardest forms of foreign matter to spot (Tschirley *et al.*, 2004). However, this intervention was designed at least in part to signal new “rules of the game” to farmers and not only to compensate for undesirable practices by farmers. It is believed that the intensity of inspection has declined now that the new quality regime is enforced and established within the sector.

Meanwhile, Figure 4 is based on Cotlook quotations, corroborated in discussions between Gérald Estur and international traders, and shows the prices at which *top* types of lint from each country were offered for sale in the mid-1990s and in the past year.

Figure 4



source: Estur, 2006

Given trends in international demand for lint quality, falls in lint quality for particular national origins can be clearly assigned to domestic causes. The evidence from cotton sectors is not that liberalisation necessarily leads to a decline in lint quality, but that highly competitive markets for seed cotton, where numerous buyers scramble to obtain cotton from producers, are bad for quality control. Such markets may, of course, result from liberalisation, although, as discussed later, not all liberalised sectors have evolved in this highly competitive way. To substantiate these points, we consider the cases of Tanzania, Zimbabwe and Zambia.

Cotton Quality in Tanzania

A cotton sector that has attracted considerable attention since liberalisation (often for the wrong reasons³²) is Tanzania. Prior to liberalisation in 1994/95, Tanzanian lint regularly enjoyed a premium over the Cotlook A index price. There is some evidence that this premium began to fall prior to liberalisation, as grading became lax and lint was no longer considered clean (Gibbon, 1999). Nevertheless, Gibbon, 1999 also reported that lint quality had fallen further post-liberalisation, because of the mixing of seed types in the chaotic seed cotton market and a reduction in producers’ access to crop protection chemicals (as high levels of

³² In the past couple of seasons there has been a marked upturn in cotton production in Tanzania and also some respite in the quality story, as weather conditions, new seed, improved availability of crop protection chemicals and higher capacity utilisation at ginneries have all assisted lint quality. However, the fundamental quality problems described in this section have yet to be resolved.

competition undermined buyers' brief post-liberalisation attempts to recover input credit). Moreover, as ginning capacity expanded, buyers prioritised volume over quality at primary marketing in a "scramble" for seed cotton. This latter problem was exacerbated by the precipitous decline in seed cotton production in the later 1990s, giving rise to chronic over-capacity at ginneries.

In response, Baffes, 2002 argued that private ginners got their lint to market quicker than pre-liberalisation cooperatives had done, which would tend to reduce spoilage during storage. Moreover, he claimed that price data from Cotlook for Tanzanian lint c.i.f. North Europe showed only a very small decrease in the premium over the A Index (from 10% to 8%) from the seven seasons prior to liberalisation to the seven seasons after. However, this latter argument failed to take into account the tiny share of Tanzanian lint exported to Europe in the post-liberalisation period (c5%) and the fact that this lint is not representative of Tanzanian exports more generally (Maro and Poulton, 2005). Indeed, the high prices paid for the small quantities of lint exported to Europe, compared to the much lower prices paid for the bulk of lint exported to Asia, would be broadly consistent with a significant leftwards shift in the SS curve in the left-hand panel of Figure 1.

The findings of the two surveys summarised in Figures 3 and 4 show clearly that the quality premium for Tanzanian lint has fallen since liberalisation. In addition, although the number of samples was small, International Textile Manufacturers Federation, 2001 reported Tanzanian lint to be some of the most contaminated in the world, along with national origins from Nigeria, Turkey, India, Tajikistan, Pakistan and Uganda. Tanzanian lint samples were found to be contaminated with various fabrics (plastics and jute), string (again, plastics and jute), organic matter, sand/dust, metal/wire and grease/oil.

Stakeholders in Tanzania are very clear that the major quality control problem in their highly competitive sector is the inability to enforce grading at primary marketing. If one buyer tries to do this, farmers can choose to take their seed cotton to an alternative buyer, who will purchase it without serious scrutiny. Farmers thus have no incentive to seek to produce high quality seed cotton.

Cotton Quality in Zimbabwe

If the Tanzania story has attracted some attention as a case of the negative impacts of market liberalisation on product quality, the recent experience in Zimbabwe is perhaps even more revealing. Prior to liberalisation in 1994/95 Zimbabwe had established a reputation as a supplier of high and uniform quality lint. This reputation was maintained throughout the remainder of the 1990s by the duopolistic sector that emerged from the managed liberalisation process (Larsen, 2002; Poulton *et al.*, 2004). In other words, the immediate impact of liberalisation was not a fall in quality. The two firms that dominated the sector saw it as being in their interests to maintain high quality standards. They did this by continuing to use the national standards for grading at primary marketing that the pre-liberalisation Cotton Marketing Board had developed. Moreover, they used their influence within the National Cotton Council (NCC)³³ to insist that the first additional entrants into the sector should do the same.

³³ The NCC was a regular meeting of major stakeholders within the cotton sector, including cotton companies, farmers' organisations, the Ministry of Agriculture, textile companies, oil millers and input suppliers, at which

However, one indirect consequence of the economic crisis that engulfed the country after 2001 was a rapid increase in the number of cotton buying companies, from five during 1999/2000 – 2000/01 to eleven in 2002/03 – 2003/04 and fourteen in 2005/06. This has challenged previous quality control practices in a way that the initial, managed liberalisation did not.

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 were buying seed cotton to sell onto registered companies. Such players got bolder in 2002/03, with one of the new entrants being the first to offer flat rate (irrespective of grade) prices for all its seed cotton purchases. Moreover, in 2002/03 even the larger companies were forced 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. 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 at the ginneries before ginning. However, in the worst cases (amongst some of the newer companies), grading at the ginneries is reported to have comprised little more than the removal of a few over-contaminated seed cotton bales.

As can be seen from Figures 3 and 4, these dramatic changes in seed cotton buying practice (which leading players in the sector are now trying to get the Ministry of Agriculture to counter through new regulations) have had some impact on lint premia in international markets, although not as much as might be expected. This will be investigated further by the author in the new year, but two hypotheses at present are that:

- the leading companies have responded to the lower quality seed cotton delivered by farmers by increasing their own sorting practices prior to ginning. In terms of the right-hand panel of Figure 1, companies have taken on more responsibility for quality, whilst farmers now take on less;
- many good practices are deeply ingrained in Zimbabwean farmers – and are still reinforced by extension agents working for the main companies – so the quality collapse has not been precipitous.

Both of these hypotheses suggest that the main companies have been able to limit the damage to Zimbabwe's international quality reputation in the short term, whilst they have pressurised the Ministry of Agriculture to introduce new regulations for the more competitive sector. However, if the new regulations are not forthcoming or are not effective, then Zimbabwe's lint premium could fall more rapidly in future years³⁴.

developments within the sector were monitored and discussed. However, it possessed no formal regulatory power.

³⁴ We also note that the number of buyers in the Zimbabwe cotton sector is still less than half that operating in the Tanzanian sector. In 2004 the two main firms in the Zimbabwe cotton sector still accounted for almost 80%

The Zimbabwe case is important in that it punctures some of the undue optimism expressed by Tollens and Gilbert, 2003 that (all types of) private markets can be assumed to be able to handle quality issues in an efficient manner and that government intervention in quality control is likely to lead to economically sub-optimal outcomes³⁵. In Zimbabwe private firms initially sought to maintain pre-liberalisation quality standards and were successful in doing so. However, it became more difficult – perhaps impossible – to do this when the market structure changed. In terms of Tollens and Gilbert's model, the cost of supplying high quality lint rose dramatically as additional players entered the sector and began scrambling for seed cotton. The apparent impossibility of providing clear incentives to producers to produce high quality seed cotton under such circumstances reduced the supply of good quality practices by producers, forcing companies to accept additional costs for trying to maintain quality. From a quality point of view, this was both a less effective and less efficient arrangement than the one that had preceded it.

Cotton Quality in Zambia

The Zambian cotton sector, like that in Zimbabwe during the 1990s, is dominated by two main players, currently Dunavant and Cargill³⁶. Again as in Zimbabwe during the 1990s, both main players accept the importance of trying to raise lint quality and so have provided consistent incentives to producers to deliver higher quality seed cotton. This has involved efforts to enable farmers to access good quality planting seed and crop protection chemicals, extension advice and consistent grading at primary marketing. Of particular note has been the efforts, led by Dunavant, to eradicate polypropylene contamination from purchased seed cotton. Inspection points were set up at all buying points at which company employees laboriously checked deliveries for polypropylene fibres. Contaminated seed cotton was rejected. Given the dominance of the two main companies, farmers had few alternatives but to fall into line with their quality requirements (Tschirley *et al.*, 2004).

Coordination Failure in the Supply of Product Quality

This section seeks to explain why product quality has at times been observed to decline in highly competitive, liberalised marketing systems, even when international markets were ready to reward higher quality³⁷. The argument is constructed by contrasting the Tanzanian and Zimbabwe cotton cases with:

of seed cotton purchases in the country, whereas in Tanzania the top five buyers accounted for less than 40% of seed cotton purchases.

³⁵ Tollens and Gilbert, 2003 assert that, "in a competitive market for a standardised product, government does not need to regulate in order to ensure a normal commercial outcome" (p340).

³⁶ As in Zimbabwe, there was an orderly privatisation of the pre-liberalisation parastatal Lintco, which was split into two and sold to Lonrho and Clark Cotton. Dunavant acquired the Lonrho operation in 1997, whilst Cargill recently bought Clark Cotton.

³⁷ The Tanzanian and Zimbabwean cotton sectors provide clear examples of this. How widespread the phenomenon has been remains open to debate. In addition, as noted above, whilst Tollens and Gilbert, 2003 demonstrate convincingly that changes in world demand for cocoa quality dominated the effects of liberalisation on cocoa quality in Cameroon, they do not in fact establish the impact of liberalisation on quality in that case. Indeed, in the case of cocoa and coffee, it could be that in several countries the changes in world demand for product quality and the impact of liberalisation on the supply of product quality have worked together to *reduce* quality post-liberalisation.

- the Tanzanian coffee sector (at least, the Technoserve experience) where higher quality was produced within a competitive output market in response to market signals;
- the Zambian cotton sector (and the Zimbabwe sector during the 1990s) where higher quality was delivered by a concentrated market system, whilst more competitive cotton sectors faced by the same international market conditions saw quality decline.

There are three main elements to the explanation provided:

- prohibitive coordination costs involved in providing clear quality incentives to producers
- low price differentials for higher quality products
- additional “confounding” factors.

Prohibitive Coordination Costs

As already noted, there is a qualitative difference in the quality challenge facing cotton sectors on the one hand and coffee and cocoa sectors on the other. In the latter cases, much of the quality outcome depends on the post-harvest processing effort. Decisions about production practices and processing practices can to a certain extent be delinked. According to the Tollens and Gilbert model, producers choose how far or well to process their (given) crop based on the net prices that they will receive for different degrees or thoroughness of processing. In the case of cotton, pre-harvest and harvesting practices are critical. Hence, it is important to maintain clear pricing differentials for seed cotton, all of which is unprocessed but which exhibits varying levels of quality.

In cotton, therefore, seed cotton price differentials perform two, at times conflicting, functions (Maro and Poulton, 2004):

- signalling short-term demand for seed cotton of differing qualities
- providing longer-term incentives for producers to deliver higher average quality of seed cotton.

When seed cotton is scarce, there is a tendency – particularly in highly competitive markets – for price differentials across grades to be squeezed. As noted above, in extremis (when “confounding” factors are important), they may disappear altogether. This, however, undermines the longer-term incentives facing producers to deliver a high average quality of seed cotton. To maintain the longer-term incentives, there may have to be some check on the short-term competitive demand for seed cotton. In concentrated sectors, leading companies can agree to maintain price differentials across grades even where short-term competitive pressures would otherwise cause them to be compressed. This is because:

- it is relatively easy for two or three large companies to agree a common course of action
- those same companies can reasonably expect to be the principal beneficiaries of higher average future quality of seed cotton.

By contrast, in sectors with multiple buyers, there is a strong temptation for individual companies to compress price differentials so as to garner more seed cotton in the short-term. This will raise their capacity utilisation at their ginnery, thereby (partially?) offsetting the losses incurred through paying slightly more for lower grade cotton. Other “confounding” factors may further raise the gains from short-term, opportunist behaviour. In the absence of

third-party enforcement of set quality standards at primary marketing, a common approach to grading is hard to enforce.

Low Price Differentials for Higher Quality Products

In the Tanzanian and Zimbabwe cases, quality-conscious cotton buyers are unable to unilaterally insist on grading and associated price differentials at primary marketing in highly competitive markets because they are undercut by competitors who put quantity before quality. The question, therefore, arises: why would higher prices achieved on the world lint market not allow these quality-conscious firms to pay higher prices for good quality seed cotton?

One answer that has already been touched on is that competitors may achieve higher capacity utilisation at their ginneries as a result of being less selective in their seed cotton purchases. This may boost the prices that less quality-conscious ginners can pay, (partially?) offsetting the lower prices that they receive for their lint from international buyers. Certainly, interviews with the manager of the most quality-conscious cotton company in Tanzania (at least, prior to the bumper harvest in 2004) indicated that their insistence on quality control had caused them to forego seed cotton volume.

This then focuses attention on the size of the premium obtained through selling a higher quality product in relation to the cost savings from achieving higher capacity utilisation. Where the quality premium is high, some sacrifice of capacity might still be a price worth paying. In the Technoserve coffee case, access to the specialty market allowed KILICAFE to pay a price 60% above that offered to farmers by competitors. Whilst cotton lint quality is important, the price differentials for lint of different qualities are not of this magnitude (see Figures 3 and 4).

“Confounding” Factors

Furthermore, there may be other reasons - generally but not always of a transitory nature - why it may pay to put quantity ahead of quality.

Maro and Poulton, 2005 advance two arguments to explain why higher prices obtained in international markets do not necessarily translate into an ability to pay higher seed cotton prices at buying posts in Tanzania. These are as follows:

- There is widespread evasion of the high level of taxes and levies imposed on cotton buying and ginning operations in Tanzania. However, companies with an international brand reputation³⁸ perceive it as too risky to their wider brand reputation to be caught in flagrant tax or levy avoidance. They may, therefore, end up paying more in levies and taxes than some of their less quality-conscious competitors, which reduces their ability to pay higher prices at their buying posts even if they do achieve higher prices from the sale of their lint.
- Meanwhile, companies that are not part of vertically integrated international production and trading operations (i.e. the remainder of the companies in Tanzania) can find it difficult to translate higher quality lint into higher prices on export markets. This is

³⁸ There are currently only three such companies in the Tanzanian sector, but these are all interested in insisting on proper grading and quality control practices.

because – particularly in the case of forward contracts and/or in the absence of reliable HVI reports on lint properties – spinners will be unwilling to pay international traders a premium for Tanzanian lint from an unknown source, given the unreliable reputation of Tanzanian lint as a national origin. International traders, therefore, have no basis on which to offer premium prices to “independent” Tanzanian ginners who sell their lint to exporters.

In Zimbabwe in 2001/02 and 2002/03 the main company Cottco argued that it was unable to match the prices offered by new entrants, even though it had a long-established reputation for quality on international markets, because it was much more visible to government agencies that were seeking to stamp out “abuse” of the rampant parallel foreign exchange market that developed in the country after 2001. In a similar vein, Tollens and Gilbert, 2003 argue that shortages of foreign exchange in Nigeria in 1986/87 caused traders to scramble for cocoa in the newly-liberalised market, sacrificing quality in the process. The parallel market mark-up on the scarce foreign exchange that could be generated through cocoa export exceeded the quality premium obtained if you achieved higher quality cocoa.

Tollens and Gilbert, 2003 argue that the Nigeria cocoa case is a special case. However, the Zimbabwe and Tanzania cotton cases suggest that these “special cases” may actually be quite common.

Returning to the concentrated Zambian cotton sector (and the similarly concentrated sector in Zimbabwe in the 1990s), firms do not face the trade-off between processing volume and quality because they agree to all pay similar prices for given grades of seed cotton. This raises a bigger question as to whether prices in general are lower under such concentrated sectors³⁹. This is a more complicated question than it may at first appear, as concentrated sectors incur costs in the provision of pre-harvest services to producers that are not borne by more competitive sectors. We return to the question of whether producers are better off under concentrated or competitive sectors in the final section of the paper. However, at this point we note that, perhaps surprisingly, initial indications are that concentrated cotton sectors have so far paid prices comparable to those paid by more competitive sectors (Poulton *et al.*, 2004).

Conclusions on Quality

Whilst recognising the important contribution of Tollens and Gilbert, 2003 in drawing attention to demand for product quality as well as supply in post-liberalisation export marketing systems, this section has sought to challenge the following:

- their assertion that product quality will adjust to socially optimal levels under liberalised marketing systems
- the assumption made both by them and by Baffes, 2002 that liberalisation will necessarily be good for commodity quality.

³⁹ One should perhaps also consider the possibility that, like the monopoly parastatal systems before them, concentrated sectors use their market power to force “excessive” quality control costs onto producers. However, behind this thought is the notion that somewhere there is a competitive model that provides the benchmark for efficient quality control. As we have demonstrated, in practice the more competitive African cotton sectors are anything but a model in this regard. Our analysis, therefore, has to rely not on reference to theoretical ideals, but on comparative analysis of discrete institutional alternatives (Williamson, 1985). This takes us back to the empirical assessment discussed in the main text.

Instead it has argued that highly competitive output markets, where numerous buyers scramble to obtain commodities from producers, are bad for quality outcomes. Such output markets may result from liberalisation, but this is not necessarily so. Furthermore, it has identified additional conditions – related to the way in which quality is achieved and the premium associated with higher quality, plus the presence of what it has called “confounding” factors – that make the quality problem in competitive output markets more challenging.

Tollens and Gilbert, 2003 are correct to question the costs and benefits of achieving higher product quality in liberalised export cash crop systems. In highly competitive output markets the challenge is to find low-cost ways of encouraging higher quality, something that can apparently be readily accomplished through informal, inter-firm coordination in concentrated sectors (Poulton *et al.*, 2004).

So far no lasting solution has been found to the quality problem within the Tanzanian cotton sector. In Zimbabwe new regulations have been proposed to control behaviour at primary marketing, but these have yet to be officially (or legally) adopted.

4. *Input Supply*

Prior to liberalisation, parastatal- or cooperative-run cash crop systems often provided production inputs to selected smallholder producers on a credit basis. This solved two problems:

- In many major cash crop areas, independent input markets had never developed (although this was part cause and part symptom of the arrangements developed within the cash crop sectors). Thus, provision through the parastatal or cooperative system solved the problem of availability;
- Many cash-strapped smallholders struggle to pay for inputs at the start of a cropping season – or worse still, in the case of pesticides, part-way through. Thus, provision on credit solved the problem of affordability.

Immediately following liberalisation, there were several instances of production credit being discontinued, as private traders found themselves unable to recover seasonal loans within a competitive output marketing system (Shepherd and Farolfi, 1999). The challenge of recovering seasonal loans has remained a major theme within liberalised cash crop markets, as will be explained below. The institutional arrangements within many sectors are still evolving as they seek solutions to the input credit challenge. However, before we consider details, a few general observations are in order:

- Firstly, whilst input credit within liberalised cash crop systems remains a major challenge, the magnitude of the challenge is nothing compared to the challenge of providing credit to assist production intensification by semi-subsistence producers of food and other crops for domestic markets in Africa. We can report plenty of success, as well as failure, in the cash crops arena, but minimal progress across the whole of Africa with food crops.
- Secondly, the challenge of providing input credit for cash crops appears greater in Africa than, say, in India. In India informal financial markets are much better developed than they are in Africa, even if interest rates can be high. In addition, microfinance organisations have a significant presence in many rural areas, whereas in Africa they

remain principally a peri-urban phenomenon. Thus, BASIX in India provides seasonal credit and other financial services to over 200,000 cotton farmers [J.Kydd, *pers.comm.*].

- Thirdly, the challenge of providing input credit for cash crops increases with the size of the seasonal input requirement in production, which, as noted earlier, varies by crop.

Market Liberalisation and Input Credit in the Tanzanian Coffee and Tobacco Sectors

Winter-Nelson and Temu, 2002 use farm survey data to assess the winners and losers from coffee market liberalisation in Tanzania, given that the entry of private traders into primary marketing and curing dramatically reduced marketing margins, but that at the same time traders found it non-viable to continue the pre-liberalisation practice of providing inputs on credit to producers.

They note that traders did respond to the inputs availability problem by selling inputs through their buying posts at harvest time. However, this only solved the affordability problem for farmers who were willing and able to purchase the following season's inputs early and hold onto them until required, foregoing other consumption possibilities in the meantime.

Winter-Nelson and Temu, 2002 approach the estimation of winners and losers in two different ways, but both approaches generate the basic answer that about 85% of producers were better off as a result of liberalisation because the gains from higher producer prices more than offset the loss from reduced access to credit. We offer the following comments:

- The reduction in marketing margins appears to have been particularly dramatic in the Tanzanian coffee case (from TShs 450/kg of coffee to TShs 100/kg);
- In their second calculation, which considers a trade-off between lower yields as a result of decreased input access and higher prices for yields that were achieved, Winter-Nelson and Temu suggest several reasons why their calculation may overstate the number of losers from liberalisation. However, they also omit one important reason why their calculation might instead understate this number. This is that they assume that, pre-liberalisation, farmers used the *recommended* input package to achieve the observed mean yield level. This is unlikely. If instead the average pre-liberalisation farmer used half the recommended input package to achieve the observed mean yield level, then the chances of losing out from reduced input access post-liberalisation actually increases.

Nevertheless, Winter-Nelson and Temu, 2002 is a rare and valuable attempt to quantitatively assess the relative costs and benefits of the impact of cash crop liberalisation in both input and output markets. It highlights:

- The importance of yield and quality response to input use in determining producer welfare outcomes from liberalisation;
- The role of input use intensity in determining these outcomes, as fewer producers will suffer from lost yields (instead suffering “only” from foregone consumption through having to purchase inputs on a cash basis) if input use intensity is moderate or low⁴⁰.

⁴⁰ Winter-Nelson and Temu, 2002 state that a recommended input package for one hectare of coffee in the mid-1990s would have cost around TShs 12,600. This was around 28% of the gross value of output that an average farmer could have expected from that hectare. This figure (28%) is comparable to current figures for cotton in more intensive sectors in southern and eastern Africa. However, as noted in the main text, it is unlikely that producers using the recommended input package would only achieve average yields.

Sarris *et al.*, 2006 use survey data from Ruvuma and Kilimanjaro regions of Tanzania (encompassing tobacco, coffee and cashew producers, as well as households that are not engaged in production of a major cash crop) to assess the benefits of crop input use. Their efficiency analysis suggests that there is considerable under-utilisation of purchased inputs (unlike labour in both regions and land in Ruvuma) and that household incomes could be increased considerably if only input credit was available to facilitate access to inputs. The one exception to this general story is found amongst tobacco producers in Ruvuma, who, if anything, use inputs more intensively than is optimal. This is possible because these producers are part of a contract farming scheme.

From this analysis, it appears that the tobacco sector has been reasonably successful in overcoming an important constraint confronting many smallholder farmers in Tanzania. However, there is a controversial sector organisation story behind this success. Three firms have dominated the Tanzania tobacco sector in recent years. Given the importance of purchased input usage by smallholder producers, all three initially provided credit to their contract farmers. However, despite there only being three main firms in the market, they found it extremely difficult to recover input loans. Their solution was to create a common company to handle all dealings (input supply, output purchase and credit recovery) with smallholder tobacco producers. The three processing companies are all shareholders in this combined venture and share out the resulting tobacco leaf for processing on the basis of a mutually agreed formula. In other words, the solution to the input credit problem has been achieved at the cost of removing most of the competition in the output market.

Input Credit Within African Cotton Systems

Poulton *et al.*, 2004 describe how a number of liberalised African cotton systems have responded to the challenge of providing input credit to smallholder producers, given that cotton is a similarly input-intensive crop to tobacco. Many cotton systems do now have working systems for input credit (or an alternative). These differ according to the structure of the sector, which is a major determinant of what is feasible. As in the area of quality control, concentrated sectors find it much easier to recover input credit than highly competitive ones. In the latter, active state intervention has been required to ensure that a system exists by which smallholder producers can access and afford seasonal production inputs. As in the case of Tanzanian tobacco, some trade-offs are observed between coordination to ensure input provision and competition in the seed cotton market.

Early players in the liberalized cotton sector in Ghana agreed to provide a common input package to all producers. Until 1995 no explicit charge was made for this package, except for ploughing cost. Instead, the per kilo price paid for seed cotton was adjusted downwards to recoup the costs of inputs supplied, based on a notional average yield of 600 kg seed cotton per half-hectare unit. The main strength of this so-called “free input” system was that, when combined with common pricing by all cotton companies for inputs and seed cotton, it removed almost all incentive for a producer to side-sell. In fact, side-selling was relatively rare. The two main disadvantages were that more productive farmers subsidized less productive ones and, more seriously, that common price setting reduced competition from price formation. As a result, the price of seed cotton fell steadily after liberalization in relation to input costs and to competing crops such as maize and groundnuts. Producer commitment to cotton, and hence yields, also fell (Poulton, 1998).

In response, and on the basis of external advice, the sector moved during the mid-1990s to a more conventional system in which an explicit deduction was made for the inputs received by each producer. Effective prices (after adjusting for input payments) were not raised, however, and side-selling escalated dramatically in the second half of the decade, as producers now had a strong incentive to sell to a company other than the one that provided them with inputs. This experience led to pressure, by 2000, for a local monopoly system. Unfortunately, insufficient consensus was achieved amongst the companies regarding the allocation of concession areas and activity in the sector has yet to recover from the resulting acrimony.

Zimbabwe is unusual amongst countries of southern and eastern Africa in that many producers (c.45%) use inorganic fertilizer on their seed cotton crop. This, together with pesticide use, was promoted particularly through Cottco's widely admired credit scheme⁴¹. Established in 1992 (prior to liberalization), the scheme achieved exceptional repayment rates during the 1990s – a claimed 95-98% in non-drought years – based on strong joint liability borrower groups, supported by extension and training support from Cottco staff, and backed up by the threat of asset seizure as a last resort (Gordon and Goodland, 2000). Since 2001, however, the number of buyers competing for seed cotton in Zimbabwe has grown considerably (to 14+ now). On the positive side, this has led to the creation of new input credit schemes as new entrants seek to lure farmers away from Cottco. However, as competition for seed cotton has intensified, side-selling has also become much more widespread, threatening to provoke companies into dramatically scaling back their credit schemes.

Similarly, in the concentrated Zambian sector, side-selling dogged attempts to provide pesticides to producers on credit following the entry into the market of several smaller buyers in 1997. Dunavant's response to this was their so-called "distributor" system. Under this system, extension agents previously employed as company staff were transformed into self-employed contractors, who on-lend and provide extension support to producers. "Distributors" are paid by Dunavant on the basis of seed cotton volume delivered and the level of loan recovery achieved. During the 2001/02 marketing season, Dunavant had nearly 1400 distributors, each working with an average of 40 farmers. These numbers have since increased considerably. Pursuing this model, the company's credit repayment rate has risen from around 65% to over 90%. However, in 2006 it fell again, as an appreciation in the real exchange rate reduced the attractiveness of cotton production to producers.

In Mozambique, where a concession model exists (similar to that now in place in Ghana, although predating it by a decade), exemplary credit recovery rates for pesticide loans are claimed where an effective local monopoly is preserved. However, during two periods of intense "pirate" buying within concession areas in the later 1990s, credit repayment rates in Nampula fell as low as 60%.

In the two highly competitive, Uganda and Tanzania, early post-liberalization experiments by individual ginners with input credit resulted in large losses (Gordon and Goodland, 2000, Gibbon, 1999). After this the two sectors attempted contrasting solutions to the problem.

Gordon and Goodland, 2000 describe an attempt by the Uganda Ginners and Exporters Association (UGEA, to which all the country's ginners must belong) to deliver pesticides on credit to the majority of the country's 300,000 plus producers. In 1998 the newly-formed

⁴¹ Cottco is the privatised ex-parastatal, which has remained the dominant firm in the sector since liberalisation.

UGEA took a loan from the Bank of Uganda, which it used to procure inputs, which were then distributed to farmers through the Cotton Development Organisation (CDO). At harvest time, ginners were free to compete for seed cotton, and paid a per unit levy to UGEA based on the volume of seed cotton that they ginned. This levy was set at a level designed to ensure repayment of the entire original loan from Bank of Uganda. Unfortunately, bad weather dogged the first season's attempt, total production was around half what was anticipated and only part of the loan could be repaid. There were also difficulties in controlling who received inputs and what they did with them. After a second attempt the following season, (with good weather) the approach was then abandoned.

Subsequently, the sector has moved to a zonal system, whereby the country is divided into a number of cotton production zones. All ginners in a zone are required to contribute to a zonal investment fund, which, amongst others things, can fund input credit to producers. At harvest time, only ginners from within the zone can purchase the resulting seed cotton output. Competition is greatly reduced not only by this restriction, but also by the fact that each ginner receives an initial quota based on their contribution to the zonal investment fund. Ginners can only buy more than their quota once other ginners from the zone have satisfied theirs.

In Tanzania from 1999, levies paid on ginned seed cotton were used by the Cotton Development Fund (the board of which has a mix of Cotton Board, Ministry and private sector representation) to procure insecticides for at-cost distribution to farmers through district and village governments. The initial model for this was not a good one (Maro and Poulton, 2005), but from 2003 this has been replaced by a passbook system whereby producers receive an entitlement to inputs (seed and/or crop protection chemicals) for a given season based on the volume of crop sales that they recorded the previous marketing season. This is a "forced savings" system, rather than a credit system, as no system has yet been devised to ensure loan repayment in an output market as competitive as Tanzania's. However, initial observations on its performance were positive and it is credited with contributing to the record national cotton harvests achieved in 2004 and 2005. A strong lead from the Tanzania Cotton Board, under scrutiny from MPs in the cotton production regions, was necessary to introduce the passbook scheme, given the difficulty of achieving voluntary coordination amongst 30+ private ginners.

In West Africa, most cotton sector reforms are more recent than in southern and eastern Africa. None have involved the free competition amongst ginners observed in Tanzania and (initially) in Uganda. The sector that generates the most optimism at present is in Burkina Faso (currently Africa's largest cotton producer). Here sector reform involved the move to a concession model, with the existing cotton production area divided up into three zones, but only after considerable efforts had been made to build the capacity of farmers' organisations to participate in overall sector governance. The monopoly element in the concession model enables companies to continue extending and recovering input credit to support relatively intensive cotton production. As there is no direct competition for seed cotton purchase, the government has insisted that sector stakeholders work out a binding seed cotton pricing model that guarantees producers a fair price. The current formula gives producers 60% of the Cotlook A Index lint price – a proportion only occasionally exceeded in the more competitive Tanzanian sector. Unfortunately, almost as soon as this formula was agreed, the overvaluation of the FCFA rendered the activities of cotton companies non-viable at prevailing world lint prices, if producers had to receive 60% of the lint price. Along with many other cotton sectors

in Francophone Africa, the Burkina sector has been struggling with a heavy debt burden for the past couple of seasons.

Summary on Credit

The importance of creating mechanisms for the distribution and recovery of input credit depends on the input intensity of the crop. Within our focus crops, the input credit challenge has proved most serious in tobacco and cotton, where it has at times been a major driver of sector organisation. As in the area of quality control, concentrated cash crop sectors find it much easier to recover input credit than highly competitive ones. In the latter, active state intervention has been required to ensure that a system exists by which smallholder producers can access and afford seasonal production inputs. Some trade-offs are observed between coordination to ensure input provision and competition in the seed cotton market.

5. Competition and Coordination

Experience with both quality control and input credit provision in liberalised African cash crop systems suggests that institutional arrangements to meet these challenges need to be tailored to the circumstances of the specific sector. One major determinant of what will and will not work in a given context is the basic structure of the sector.

Poulton *et al.*, 2005 argue that, in the light of these challenges, the emphasis for donors should not be on searching for particular institutional fixes that can be transferred across countries, but instead on supporting the emergence of sector-level fora for constructive multi-stakeholder dialogue. Although not a panacea, there are grounds for optimism that, out of such dialogue – and no doubt also through some trial and error – institutional solutions appropriate to local contexts will evolve.

Hand in hand with the encouragement to support process, rather than particular institutional fixes, a clear message from the experiences reviewed in this paper is that ideological assumptions about the respective roles of markets, state and other actors should be avoided. The roles of different actors will depend, *inter alia*, on the nature of the commodity concerned and the structure of the output market.

Finally, however, it is important to place sectoral experiences with quality control and input credit provision into a broader context. As emphasised by Winter-Nelson and Temu, 2002, it is important to consider the performance of a sector (or form of sectoral organisation) in a holistic way, rather than simply focusing on one aspect. Could it be that, although highly competitive cash crop sectors perform less well on quality control and input credit provision than, for example, more concentrated sectors have so far done, they nevertheless generate greater benefits for the producers concerned because they deliver higher prices to them for their output?

In the case of cotton, which has informed quite a bit of our thinking in this paper, the evidence is still inconclusive. Tables 6 and 7 present some rather crude evidence on this. The figures in these tables are based on “national average” data, which, as Winter-Nelson and Temu, 2002 point out, can hide major variation across producers. Furthermore, a thorough analysis of prices requires that differential transport costs and taxes across countries/sectors be taken into

account, which the figures in Table 6 do not do. Even then, it is difficult to control for the effect of different exchange rate policies across countries when comparing prices in a common currency. The Zimbabwe figures in Table 6 (and, therefore, by extension Table 7) are heavily influenced by major movements in the real exchange rate during the period in question.

Table 6: Seed Cotton Price (US\$/kg) in Selected Cotton Systems, 1998-2004

	1998	1999	2000	2001	2002	2003	2004	Mean
Mozambique	0.25	0.17	0.15	0.12	0.13	0.17	0.18	0.17
Tanzania	0.27	0.22	0.22	0.20	0.19	0.27	0.24	0.23
Zambia	0.29	0.18	0.21	0.24	0.19	0.26	0.30	0.24
Zimbabwe	0.24	0.39	0.33	0.16	0.11	0.17	0.43	0.26

Source: Poulton *et al.*, 2004 (updated)

Table 7: Estimated Returns to Labour (US\$ per family labour day) in Selected Cotton Systems, 1998-2004

	1998	1999	2000	2001	2002	2003	2004	Mean
Mozambique ⁴²	0.93	0.68	0.31	0.29	0.32	0.42	0.62	0.51
Tanzania	0.56	0.95	0.98	0.67	0.94	0.99	1.65	0.96
Zambia	1.05	0.53	0.73	0.98	0.75	0.93	1.15	0.87
Zimbabwe	1.31	2.27	2.17	0.94	0.40	0.76	1.71	1.37

Source: Poulton *et al.*, 2004 (updated)

Perhaps the most confident statement that can be made at this stage⁴³ is that no sector consistently dominates. The comparison between the concentrated Zambian sector and the highly competitive Tanzanian sector is particularly instructive. The prices paid by companies in the two sectors are surprisingly similar and the higher yields achieved in the Zambian sector have not been sufficient (at least for the “average” farmer assumed by these tables) to generate higher returns to producers’ labour, once higher input costs and family labour input have been taken into account. The gradually rising seed cotton yields plus rising quality of Zambian lint may be signs that the competitive prospects of the sector are bright. However, this has apparently not so far translated into significantly higher returns for Zambia’s cotton farmers.

⁴² Mozambique figures refers to performance in the troubled Nampula heartland. In newer concessions areas, where yields are much higher, estimated average returns to labour were US\$1.01 in 2003 and 1.43 in 2004.

⁴³ A much more detailed analysis of prices and returns across nine sectors will be carried out during the first half of 2007.

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