

Competition and coordination in liberalised African cotton market systems

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Abstract

Private operators now dominate input supply, crop buying and ginning activities in many African cotton sectors. Varying levels of competition are observed, but greater levels of competition are not associated with better system performance. This paper explores this phenomenon, drawing on the liberalization experience of Ghana, Mozambique, Tanzania, Uganda, Zambia and Zimbabwe. The paper argues that, whilst the capacity of the state to support markets remains weak, there are trade-offs to be made between the level of competition and the degree of coordination achieved between players within a sector. Three different sectoral structures are observed with the six cotton sectors considered in the paper and it is argued both that these structures determine the precise nature of the competition – coordination trade-off and that a different role for the state in supporting sectoral development is appropriate for each.

JEL Classification Codes D4, D7

Introduction

Cotton constitutes an important export cash crop in more than a third of all countries in Sub-Saharan Africa and one upon which millions of rural households depend, directly or indirectly, for their livelihoods. In a subset of these countries (i.e. most of those in Francophone West Africa), the cotton sector continues to be organized around a state-dominated, single-channel marketing system, albeit one under increasing pressure to liberalize. Elsewhere, in conformity with the general trend in Sub-Saharan Africa, the sector has been liberalized and private operators now dominate input supply, crop buying, ginning and selling activities. However, liberalization has not necessarily led to high levels of competition¹ between these private operators. Moreover, it is not clear that greater levels of competition are (so far, at least) associated with better system performance. This paper attempts to explain these phenomena, drawing on the post-liberalization experience of Ghana, Mozambique, Tanzania, Uganda, Zambia and Zimbabwe. It argues that, whilst the capacity of the state to regulate and support the cotton sector remains weak (as it can be expected to do for the foreseeable future), there may be trade-offs to be made between the level of competition and the degree of coordination achieved between players within the sector. We believe that these arguments have relevance well beyond cotton.

Coordination

We may think of coordination as effort or measures designed to make players within a market system act in a common or complementary way or towards a common goal. This may also require effort or measures designed to prevent players from pursuing contrary paths or goals. Coordination may be undertaken by private agents acting collectively or may be orchestrated by state agents defining the boundaries within which private agents can act.

In the ideal neoclassical world of perfect competition, the only coordination required between players at different stages of a market system (i.e. vertical coordination) is the coordination of demand and supply. This is achieved through the operation of the price mechanism within the market. At first glance, there does not appear to be any (horizontal) coordination amongst players at the same stage of a market system, either. However, North (1990) has argued that implicit in the perfectly competitive model - and essential to any real world approximation of it² - is a highly sophisticated set of institutions, which make information available and define and enforce the "rules of the game". Regulations and laws, to be obeyed by all players equally, define the boundaries within which competition can take place. We call these impersonal coordination mechanisms. The greater the departure from the ideal conditions of the perfectly competitive model - homogeneous, private goods, fully flexible production processes, fully informed actors, facilitated by the existence of a highly sophisticated set of formal institutions - the more challenging the coordination issues and the more likely that there will exist some form of trade-off between competition and coordination.

Investment in specific assets

Hall and Soskice (2001) have developed the arguments of Williamson (1985) regarding specific assets and vertical coordination, to argue that horizontal coordination can also provide assurance for investment in specific assets. For example, within German manufacturing, to reduce free-riding by firms on training investment, strong employer and worker associations negotiate industry-wide wage settlements for standard skill grades, such that the incentive for employees to switch firms having completed their training is minimized. In this case, there is a trade-off between investment in human skills and inter-firm competition in the labor market. The case of African cotton ginners providing pre-harvest loans to producers is directly analogous to this. The provision of loans increases the ginners' exposure to free-riding actions by cotton-buying competitors. To tackle the side-selling of cotton by producers, ginners are likely both to provide incentives directly to the producers (through the terms of the vertical relationship) and to seek ways of restraining the actions of competitors (horizontal coordination). This

is likely to involve some restraints on competition for seed cotton supply.

Provision of public goods

A variety of public goods (e.g. effective quality control regulations and procedures and high quality research) are critical to the long-run success of a cash crop system. We can identify two key dimensions to the coordination challenge in providing these:

- Agreeing what should be done (what research to fund, which standards to opt for) and how it should be done (who has responsibility for which aspects, how it should be funded);
- Implementing and enforcing these agreements, including overcoming the problems of free-riding and other opportunistic actions.

Provision of public goods is often held to be the responsibility of the state. However, where the state does not or cannot perform this function, private players³ within a market system have the following coordination options:

- Fail to coordinate and suffer the consequences;
- Establish a collective organization that can set and enforce formal rules in an impartial manner and provide public goods in place of the state. In practice, such an organization is unlikely to be truly independent of the more powerful interests that contributed to its establishment, but it may give smaller players a stronger voice than the third alternative, which is
- Rely on relational or inter-personal, rather than impersonal, coordination mechanisms. This is most likely to occur when the number of players is relatively few, as the time and associated costs of relational coordination depend, inter alia, on the number of relationships involved.

Relational coordination – characterized by informal agreements amongst concerned players, with enforcement based either on consensus or on private sanction - may well be the most effective option for many cash crop systems in Africa. However:

- There are few counter-balances to the wishes of the dominant players;
- It relies on private enforcement of rules, usually by the dominant players. This requires those players not just to have, but also to be willing to exercise, power over smaller rivals. Unfortunately, such power can also then be used (or threatened) not just to secure coordination, but also to restrict price or other forms of competition within the market.

The competition - coordination trade-off

We thus posit the following links between coordination and competition:

- Effective impersonal coordination through the set-

ting and enforcement of formal rules will tend to protect or enhance competition within a market system. However, the institutional requirements for this are high and the cost of this coordination is likely to be more expensive than that of relational coordination amongst a few major players.

- Where relational coordination is relied upon, there could be a trade-off between competition and coordination for any of the following reasons:
 - Obtaining agreements and monitoring their implementation are both generally easier where there are fewer players involved. Hence, more concentrated market systems are likely to be more effective at achieving coordination. Whether or not they suffer from lower competition will depend on the nature of the incentives facing firms;
 - Regular meetings between firms (essential to any coordination activity) will, almost inevitably, lead to information sharing and may also foster the trust necessary to engage in and sustain price collusion;
 - Preventing free-riding or other opportunistic behavior requires that those players committed to the upholding of an agreement be able to sanction those that are tempted to break it. Such sanctions may be necessary if coordination is to be achieved. However, the power to sanction can also be used to discourage competitive pricing (or other) behavior by the same competitors.

Experience of liberalized cotton sectors

In their review of the liberalization of African cash crop sectors, Shepherd and Farolfi (1999) note that liberalization has been a broadly positive experience, but that there are a number of common challenges yet to be resolved. These general findings are also relevant to the particular case of cotton. Here, too, liberalization has had a number of positive impacts (Baffes, 2001). The influx of private capital, management expertise and entrepreneurship associated with liberalization has, in most countries, contributed to a resurgence in production levels, albeit one that is now threatened by the depressed world prices for cotton lint. Almost everywhere, producers have benefited from prompter payment than was the norm prior to liberalization and now receive a higher share of the final market price for lint than they did before. Nevertheless, liberalized African cotton sectors continue to be confronted by a number of common challenges:

- How to maintain high quality standards for cotton lint - in turn requiring effective quality control procedures throughout the production and marketing chain;
- How to achieve efficient delivery of inputs to small-holder producers - in turn requiring an effective mechanism for disbursement and recovery of sea-

sonal credit;

- How to support high quality, ongoing research into improved seed varieties, pest control and cultural practices, complemented by effective extension to producers.

All of these require some form of coordinated response by the players within a sector. The experience of the six sectors covered by this paper suggests that those sectors that achieve effective coordination will perform better than those that do not, even if – in the absence of state capacity for effective impersonal coordination – coordination is achieved at the expense of some loss in competition.

Table 1 provides some indication of the relative size of the cotton sectors in the six countries, along with selected indicators of sector performance since liberalization. Unfortunately, space precludes a detailed discussion of these figures, many of which are “best estimates”. However, we do note that:

- The two earliest reformers, Ghana and Mozambique, show the most dramatic production gains post-reform, as both sectors were close to collapse prior to the entry of private capital and entrepreneurship. (A similar observation holds for Uganda).
- By contrast, in Tanzania and in the smallholder sector of Zimbabwe, production was at record levels immediately before liberalization. In Tanzania, this was achieved at the expense of mounting cooperative society debts. In Zimbabwe, losses of the parastatal Cotton Marketing Board (CMB) were largely attributable to a policy of subsidizing the domestic textile sector. Whereas Zimbabwe is widely regarded as the star performer amongst liberalized cotton sectors (Baffes, 2001), Tanzania stands out as the only sector of the six to have experienced a production contraction, despite the recent depressed world prices hitting all six sectors.
- The degree of new entry since liberalization has varied considerably across the six countries. It has been most limited (and most recent) in Zimbabwe and Zambia, whilst there have been very high levels of entry in Tanzania and Uganda.
- There is an inverse correlation between market concentration and seed cotton yield. In the absence of a strong state, it is difficult for sectors comprising numerous, small players to deliver the services that would assist smallholders to raise yields and productivity.

Meeting the coordination challenges

Three different market structures are found across the six countries. These are partly a function of history, but are also influenced by policy towards the sector. The fundamental difference in structure is between those sectors with two or three dominant buying and/or gin-

ning companies (Ghana, Mozambique, Zambia, Zimbabwe) and those with a large number of small companies (Tanzania, Uganda). However, the first group can be further subdivided into sectors where companies compete more or less freely (Zambia, Zimbabwe) and those currently operating under a local monopoly system (Ghana, Mozambique). The precise nature of the competition – coordination trade-off, as the six sectors respond to the common challenges set out above, is defined by these structures.

We here discuss quality control and input credit. There are currently no sector-wide success stories in supporting cotton research within the six countries. The small advances that have been made have occurred because large companies (within concentrated sectors) have taken individual initiatives, confident of capturing a reasonable share of any resulting benefits.

Quality control

The six countries have strongly contrasting post-liberalization experiences in this area. Whereas Zimbabwean lint is valued as well-graded, uniform and clean, Fok (2001) cites a 2001 survey by the International Textile Manufacturers’ Federation, which found that Tanzanian and Ugandan cotton lint were the second and third most contaminated in the world. (Mozambican lint was seventh worst).

In Zimbabwe coordination on quality has been facilitated by the National Cotton Council (a policy discussion forum established to bring together all the main stakeholders in the sector). In spring 2000, the existing cotton companies committed themselves to follow a common grading classification and procedures, which all buyers are now expected to follow (Larsen, 2002). In Zambia progress has recently been made in controlling polypropylene contamination, as the largest ginner has introduced cleaning stations at the entrance to their ginneries and now refuses to buy seed cotton that does not arrive at their buying posts in plastic bags. A small company facing fierce competition in its bid to secure scarce seed cotton supplies from farmers could not have pioneered this latter change.

By contrast, Gibbon (1999) notes a number of reasons for a decline in the quality of Tanzanian lint since liberalization⁴. These included: the mixing of previously zoned seed varieties, the collapse of grading procedures at the time of primary purchase and a decline in insecticide use. Behind these lay a lack of resources for monitoring and enforcement on the part of the Cotton Board and the fact that numerous buyers were desperate to acquire seed cotton, so as to fulfill forward supply contracts and pay off outstanding loans. Early indications are that the contracting of two private companies to enforce quality control at ginnery level will, at best, only partially solve the problem (Baffes

2002). A similar pattern, including mixing of seed varieties, has prevailed in Uganda.

Input credit

In Ghana and Mozambique companies are expected to provide input credit to all the cotton farmers they service. This is the main reason for the adoption of the local monopoly model in these two countries. Poulton (1998) explains how, in Ghana in the first decade of liberalization, the combined "free input"/common price system minimized the problem of the side-selling of seed cotton in a multi-buyer output market, but at the expense of removing the competitive element from price formation. During the mid-1990s explicit charges were introduced for inputs, but effective prices (after adjusting for input payments) were not raised. The problem of side-selling of seed cotton, therefore, escalated dramatically, as producers now had a strong incentive to sell some or all of their seed cotton to a company other than the one that provided them with inputs. Some of the larger players, therefore, pressed for the introduction of a local monopoly system, which eventually came into force during the 2001 season. Meanwhile, in Mozambique exemplary credit recovery rates are claimed where an effective local monopoly is preserved. However, during two periods of intense "pirate" buying within concession areas in the late 1990s, credit repayment rates in Nampula fell as low as 60%.

In Zimbabwe Cotto's widely admired credit scheme has achieved exceptional repayment rates over a number of years (Gordon and Goodland, 2000). However, it remains to be seen how robust it will prove in the face of heightened competition in the output market. In Zambia, side-selling has dogged attempts to provide pesticides to producers on credit since the entry into the market of several smaller buyers in 1997. Dunavant's so-called "distributor" system⁵, launched in 1999, has raised the company's credit repayment rate considerably, but not yet far enough for the company to conclude that it has solved its input credit problem.

Perhaps the biggest challenges for input credit are encountered in the two sectors characterized by numerous small buyers. In both countries, 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 the "collective" approach adopted by the Uganda Ginners and Exporters Association (UGEA), working through the parastatal Cotton Development Organisation (CDO). Bad weather dogged the first season's attempt, but difficulties in controlling who received inputs and what they did with them proved more intractable and the approach has now been abandoned. In Tanzania, since

1999 levies paid on all ginned seed cotton have been used by the Cotton Development Fund (the board of which has a mix of Cotton Board, Ministry and private sector representation) to procure subsidized insecticides for distribution to farmers through district and village governments. Whilst this approach could potentially increase the volume of insecticide that is available at farm level, it also further discourages private sector supply and depresses the seed cotton price received by all. A huge consignment of insecticides ordered by CDF for the 2002/03 season was not of the type that producers are familiar with. Only 15% of these insecticides were taken up by farmers and there are doubts as to whether the remainder of the stock will be moved before it goes out of code.

Both the Ugandan and Tanzanian experiences highlight the issues of governance and accountability where either state organizations or private sector representatives take action on behalf of an entire sector. One of the major objectives of liberalization was to reduce the role of state agents in taking action of this nature. However, paradoxically, where liberalization comes closest to the liberal ideal of multiple small players, this sort of action is still most needed and the challenges remain.

Competition in the different sectors

The statistics on prices in Table 1 only partially convey the competitiveness and relative price efficiency of the different sectors. For example, the level of taxes on cotton operations is far higher in Tanzania than in Zimbabwe and it is possible that transport costs are, too, even though the latter is landlocked.

Predictably, in both Tanzania and Uganda, price competition can be quite intense. In Tanzania, the Cotton Board sets a floor price for seed cotton, which generally acts as the opening price at the start of the official buying season. However, it is common for prices to rise 50% above this opening level during the course of the season. In Zambia and Zimbabwe, companies have tended to compete primarily on non-price factors (e.g. Larsen, 2002). This does not appear to have significantly disadvantaged producers in Zambia, nor indeed in Zimbabwe until recently. However, as the influence of commercial farmers within the Zimbabwe sector declines further with the ongoing land redistribution program, it will be interesting to monitor what happens to the seed cotton price. Whilst lower prices may have contributed to the entry of new firms during the past couple of seasons, the impact of their entry on prices within the sector also remains to be seen.

Currently, there is no price competition in either Ghana or Mozambique, except from a few unauthorized buyers in the latter. Whilst, under a local monopoly system, a firm's pricing policy could be assessed as part of a periodic performance-based re-tendering pro-

cess, in the absence of this there are few, if any, pressures to keep seed cotton prices up. Therefore, in Mozambique the state sets the seed cotton price for all buyers on an annual basis. (Such set prices are almost inevitably cautious). In Ghana, the pre-monopoly practice of the companies collectively setting the seed cotton price has continued into the era of zoning. Whilst it appears that there has been a useful real price increase during the first season of zoning, it would appear that this is the result of a delayed realization that prices had fallen to unattractively low levels. Past experience does not suggest that real price increases will be sustained for too long.

Concluding observations on coordination and the role of the state

In the “concentrated, market-based” sectors, the main impetus for coordination (if at all) tends to come from the dominant private companies, although the state may play a supporting (or an obstructive!) role. State agents may be required to oversee the enforcement of agreements reached between stakeholders and/or may be called upon to arbitrate between private parties who are in dispute. However, a large part of the burden for enforcing agreements rests with the firms themselves, both by their own private commitment and the pressure that they can bring to bear on other (usually smaller) firms to comply. Various tactics may be employed by larger firms that can be interpreted as attempts to remind smaller ones of the consequences of stepping out of line. The most obvious are threats to exclude them from ginning facilities.

In the “local monopoly” sectors, the state has a critical role to play in the allocation of zones or concessions. This needs to be done in as impartial a manner as possible and it appears that this has been the case in both Mozambique and Ghana (which is not to say that all players are fully satisfied by the outcome). However, in order to retain some degree of competition (contestability), the state also needs to establish procedures for evaluating the performance of concessionaires and periodically putting concessions up for re-tendering. No such procedures yet exist in either Mozambique or Ghana. In Mozambique, where the concession system is much older, it seems likely that this omission has contributed to the (perceived) disappointing performance of some concession companies in recent years and to the widespread dissatisfaction with the concession system that manifested itself particularly in 1998-2000.

Finally, the quality control and input credit case studies illustrate the point that coordination is the “Achilles heel” of sectors with multiple small players. In the absence of large private players to take initiatives, the onus is on either the state to take an active lead in public goods provision (Tanzania) or upon the multiple

small players to organize themselves formally to tackle common problems (Uganda). Both approaches can be fraught with difficulties. Moreover, even where such formal coordination is effective, it is likely to be more expensive than informal private coordination in a concentrated system. Therefore, this type of sector is always likely to shoulder a higher burden of taxes or levies than the concentrated sectors.

All sector types, therefore, face their own particular challenges in striking the competition – coordination balance. So far, the “concentrated, market-based” sectors perhaps have the slight performance edge. Furthermore, contrary to much discourse on the subject, the appropriate role for the state in supporting and regulating private market activity would appear to depend on the type of sector.

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¹ In this paper, we recognise that conduct is an equally important determinant of the competitiveness of a market as structure and also that competition can occur in more areas than just price. Nevertheless, seed cotton pricing remains a key indicator of competition within a cotton system.

² North's argument can be illustrated with respect to grades and standards. The perfectly competitive model assumes homogeneous products. However, an assumption of perfectly functioning institutions, that ensured full compliance with set grades and standards for each commodity, would deliver the same competitive outcome.

³ In a concentrated sector with limited new entry, such goods provided collectively by private players may more accurately be described as club goods, rather than public goods. However, we use the term public goods throughout, as our emphasis is on the common challenge facing all sectors as to how to provide such goods.

⁴ Baffes (2002) questions the extent to which the qual-

ity of Tanzanian lint has actually declined post-liberalization, drawing on data for international quality premia. However, these can be obtained for a number of reasons, including staple length, colour and cleanliness, type of gin used and timing of sale (Gibbon, 1999). Moreover, even Baffes notes that the very existence of a current price premium for Tanzanian lint (suggested by the data) is questioned by a recent report produced by the Tanzanian Cotton Board, as well as by ginners.

⁵ Instead of lending to farmers through company-employed field staff, the company lends inputs to independent agents (distributors), who identify and on-lend them to trustworthy producers.

⁶ Calculated as the increase in the mean annual production in the last five seasons over mean annual production in the last five seasons prior to liberalization.

⁷Based on a "blended" exchange rate of US \$1=Z \$187. Cotton exporters must sell 40% of their exports at the official exchange rate (US \$1=Z \$55 in 2001/02) and can then sell the remainder using a parallel market rate (US \$1=Z \$275 in late 2001).

Table 1. Comparison of cotton sectors in six surveyed countries (2001-2002).

Country	Year of major reform		Estimated number of seed cotton producers	Estimated national seed cotton production (tons)	% Increase in seed cotton production since reforms ⁶	Number of buying companies in 2001-2	Estimated average seed cotton yield (kg/ha)	Seed cotton price (us\$ per kg)	% Share of market of top 3 buyers (cr3) 2001-2
	reform	Year of major reform							
Ghana	1985	1985	50 000	32 000	993	12	600	0.24	88
Mozambique	1989	1989	230 000	80 000	375	15	370	0.12	50+
Tanzania	1994	1994	30 0000+	148 000	-30	c. 30	350	0.23	20
Uganda	1994	1994	300 000+	85 000	221	29	313	0.19	50-60 (CR5)
Zambia	1995	1995	80 000	72 000	163	6	500	0.26	90+
Zimbabwe (smallholders only)	1995	1995	250 000+	270 000	104	5	730	0.15 ⁷	95

Sources: Ghana (Ditoh, S., personal communication), Uganda (Lundbaek 2002; Baftes 2002) and background papers containing the information for the other four countries can be downloaded from www.wye.ic.ac.uk/AgEcon/ADU/research/projects/cottonE/index.html.