

PRODUCTION CREDIT FOR AFRICAN SMALL-HOLDERS: CONDITIONS FOR PRIVATE PROVISION¹

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1. Introduction

Historically, increases in agricultural output in sub-Saharan Africa were largely attributable to the expansion of cultivated area - through destruction of forest and cultivation of increasingly marginal areas. However, the scope to convert new lands has declined and it is now widely accepted that further production increases can only come (with a few exceptions) from more intensive production (see for example, Badiane and Delgado, 1995, Marter and Gordon, 1996, Lipton, 1988).

Whilst some intensification is achievable using farmers' own inputs, there is also an important role for purchased inputs - particularly improved seed and inorganic fertiliser. Prior to the economic reforms that have swept through most of Africa in the last 10-15 years, many farmers had better access to purchased inputs than they do now (though this is not to imply that this situation was sustainable or problem-free). For instance:

- over-valued exchange rates made imported inputs seem less expensive
- commodity marketing boards often operated crop purchase monopolies which made it relatively easy to collect on input loans advanced to farmers
- credit and inputs were often subject to public sector subsidies, and
- governments often provided agricultural marketing, extension and input services.

The adjustment vision was that an appropriate enabling environment, with less state intervention and economic distortion, would unleash the commercial sector - such that farmers would benefit from access to new markets and privately provided services. Yet the reality is that commercial activity has been highly selective and often disappointing. Those farmers most in need of productivity increases are those least able to pay for inputs. Devaluation, a more limited sphere of state activity, and tighter controls on loan programmes, have reduced access to inputs.

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"The nature of the challenge is not so much one of prices, although relative price changes have undoubtedly exacerbated the difficulties in recent years. Rather, it is that the majority of smallholders cannot afford to purchase adequate quantities of seasonal inputs on a cash basis at the start of the production season" (Poulton *et al.*, 1998, p42).

In this post-liberalisation era, there is considerable interest in the conditions for increased private sector provision of agricultural services - including credit. This paper draws on research conducted in Uganda and Zimbabwe in 1998/1999, where production inputs are advanced to small-holders by private cotton companies which do not operate crop purchase monopolies. The remainder of the paper provides: a description of the input credit schemes in each country; comparative analysis of performance; and a discussion of lessons for other credit schemes and commodities.

2. Production input credit schemes for cotton farmers in Uganda and Zimbabwe

Box 1 summarises the similarities and differences between the cotton sectors of Uganda and Zimbabwe.

Box 1: How the cotton sectors of Uganda and Zimbabwe compare

Similarities

- both have been producing cotton since the early part of this century
- both sectors were liberalised in 1994 - resulting in competitive crop purchase markets
- ginning capacity exceeds seed cotton production in both countries
- market and state reforms have led to changes in the availability of inputs for smallholders
- both sectors have received considerable donor/government support in the 90s
- the small-holder crop in both countries is unirrigated

Differences

- cotton production in Uganda is 100% smallholder; in Zimbabwe the large-scale commercial farmers produce roughly 1/3 of output
- the agricultural sector is more developed in Zimbabwe with better infrastructure, a well-developed agro-processing sector, and more use of purchased inputs - but some of these services are geared to the large-scale commercial sector
- Uganda has a large number of ginners (around 30), though a few large companies (5?) account for 50-60% of the cotton ginned; Zimbabwe has only 3 ginning companies, and one (the Cotton Company of Zimbabwe) dwarfs the other two
- In Zimbabwe small-holder cotton production has been increasing since the early 80s, whereas recovery in Uganda is more shaky and more recent
- Zimbabwe is a significantly higher income country than Uganda and commercial services are more developed in almost all sectors.

The incentives to operate input credit schemes are similar in both countries: all ginning companies are dependent to some extent on seed cotton from smallholders to maintain ginnery utilisation rates; excess capacity in the ginning sector gives companies an added reason to seek ways to secure access to smallholder seed cotton; and, the general paucity of production services for smallholders threatens seed cotton production.

However, the input credit schemes have evolved differently, so that for the 1998/1999 season the schemes in the two countries used significantly contrasting approaches. The perennial problem in operating such schemes, in the absence of crop purchase monopolies, is default by farmers who deliberately "side-sell" their crop to an alternative buyer to escape repayment of input loans.

2.1 Uganda

The withdrawal of the state from free distribution of cottonseed for planting was recognised by ginneries as seriously jeopardising seed cotton production, and therefore threatening the ginning sector. The initial response by one of the larger ginneries was to launch an ill-fated input credit scheme (for seed and pesticides). The scheme proved disastrous as the majority of smallholders defaulted on their loans, due to a combination of side-selling and a poor harvest (it was the *El Nino* year). Farmers disregarded the agreements they had entered into with the cotton company and sold to other ginneries offering higher prices. The cotton company making the loans found it impossible to enforce the purchase agreements, and attempts to seize assets proved unworkable.

In order to remove the possibility of side-selling, the Uganda Ginneries and Exporters Association (UGEA) was formed, with compulsory membership of all cotton ginneries. For the 1998/1999 season the UGEA financed the input credit scheme from a Bank of Uganda loan. In developing and operating the input credit scheme, a critical role has been played by the Cotton Development Organisation (CDO), a parastatal formed when the sector was liberalised, to provide co-ordination and regulatory services. The CDO has co-ordinated the distribution of cottonseed and pesticides. Smallholders are free to sell their seed cotton to any ginner. The ginneries are responsible for loan repayment, and these costs are met through a levy payable against volumes of cotton ginned by each ginner. (Volumes are assessed by independent monitors assigned to each ginner). Average (not individual) input costs are factored into the seed cotton price paid to farmers (and farmers receive the same price irrespective of the quantity of inputs supplied to the individual farmer³). The problem of side-selling

³ The only exception to this arises in the context of farmers in the organic production area selling organic cotton to the certified organic ginner.

has therefore been overcome by removing the option of selling to alternative buyers: all ginners are members of the UGEA so it is impossible for a farmer taking credit to sell to buyers outside of the scheme⁴. Levy avoidance by individual ginners has been reduced by the presence of monitors, and dialogue with border officials and spinning factories, where ginners (or farmers) may try to make illegal sales.

2.2 Zimbabwe

Unlike Uganda, there has been little co-operation between the three ginning companies in Zimbabwe. Out of the three companies, two operate input credit schemes (the Cotton Company of Zimbabwe (Cottco), and Cotpro). Both companies use a similar approach to overcome the problem of side-selling:

- All borrowers belong to groups of cotton smallholders. Default by one member of the group brings retribution to the whole group, which may be subsequently excluded from the scheme. This increases incentives to repay. It also encourages group members to monitor and help one another to ensure that there is no default.
- Groups performing well receive cash rewards.
- If defaulting occurs, the companies act swiftly and come down heavily on defaulters, seizing assets when necessary.
- Local agents of the cotton companies are in year-round contact with smallholders, building closer relationships and a sense of loyalty to the company⁵.
- Additional services are provided in addition to the input credit. Extension advice is provided, and the Cotton Company has recently introduced cash loans. Again, these additional benefits of "belonging" to a company help to strengthen relationships and loyalty.

⁴ Unknown quantities of seed cotton are exported to Kenya where significantly higher prices are paid. This probably affects the border districts more than other areas. Seed cotton is traded by the bag, loaded on bicycles. It is not clear whether there is any significant large-scale organised trade in seed cotton.

⁵ Interestingly, this seems to work in the interests of the cotton companies in Zimbabwe. In Ghana, however, in the absence of cotton output-based incentives, cotton company field assistants and contact farmers ("chief farmers") were liable to register poorly performing farmers and shirk on monitoring duties (Poulton, 1998).

3. Cotton input credit schemes: comparing performance in Uganda and Zimbabwe

Seven aspects of performance are considered:

- Repayment
- Farmer participation
- Efficient use of inputs
- Dependence on subsidies
- Effect on seed cotton output
- Wider development impacts, and
- Sustainability

Box 3, at the end of the section, summarises the discussion which follows.

3.1 Repayment

The input credit schemes operating in Zimbabwe reported very high levels of repayment by farmers in 1997/98: 98% for the larger of the two schemes, and 100% for the other scheme. The larger of these two schemes had suffered low repayment rates (79%) in the season immediately following cotton sector liberalisation (1994/95), prior to which the company had a monopoly on purchases of seed cotton. As a result, however, a number of steps were taken to reduce the risk of default (discussed in the previous section).

The input scheme in Uganda places the burden of repayment on the ginneries, with the ability to repay dependent on the size of the farmers' harvest. Thus UGEA negotiated a loan whereby repayment was promised at a given rate for each kilogram of seed cotton ginned, with a government guarantee provided to cover any difference between this and the aggregate amount borrowed. Given this formula, and the ginneries' need to acquire export licenses from CDO (and hence to declare volumes processed⁶), it is relatively straightforward to achieve reported repayment rates of 100%.

⁶ The ginneries also employed a private company to place monitors in all ginneries as a double-check on volumes processed.

However, the actual harvest in 1998/99 was around 80,000 bales of lint (compared with the forecast of 150,000 bales used in calculating loan repayments). The government guarantee was therefore necessary to cover roughly 50% of the repayment cost.

3.2 Farmer participation

The size of these programmes is impressive - and dwarfs any other rural credit scheme available in both countries. In Zimbabwe, 53,000 small-holders participated in the two schemes in 1997/98 (the larger of the two schemes had 48,000 participants), representing roughly 25% of small-holder cotton farmers⁷. In order to participate in the scheme farmers must meet three criteria: good repayment records for past years; acceptance by other members of the group; and achievement of certain minimum yield levels. Participation peaked in 1995/96 with 85,500 farmers in the largest scheme, but it was subsequently reigned in and procedures tightened. To the extent that these are the more able farmers, who are less poor and less vulnerable, it focuses on a large minority of more advantaged small-holders. (This focus becomes still more pronounced for a small sub-set of participants - 6,000 "gold class" farmers who are allowed to borrow cash rather than inputs in-kind).

To put the programme in more perspective, it is useful to consider the loan portfolio of the Agricultural Finance Corporation in Zimbabwe. In its peak lending year (1986), it made 94,000 loans. Since then the number of loans has fallen consistently. 50,000 loans were made in 1990, and less than 4,000 by 1998. However, the AFC has had bad experience with repayment rates. High default rates coupled with constraints on public spending that meant that government guarantees were not forthcoming, has limited the current portfolio to a small number of recipients who are not in arrears on earlier loans.

In Uganda the cotton input scheme in 1998/99 sought to target an incredible 300-400,000 farmers. Admittedly, it is unlikely that this number was reached, but even if the programme was only 70% successful (a figure suggested by CDO's managing director), the inputs still reach a very large number of farmers. There has not yet been

⁷ Such farmers can be characterised as generally farming small plots of communal or resettled lands, that are not irrigated and are principally in Natural Regions III and IV.

any systematic analysis of the impact of the scheme and who benefits - but given that large numbers of farmers are involved it seems plausible that they include a cross-section of cotton farmers, including many "typical" resource-poor Ugandan small-holders.

Poverty focus appears stronger in Uganda⁸. In Zimbabwe the credit schemes almost certainly focus on the more able farmers, whereas in Uganda, any farmer growing cotton is (to some extent) self-selected risk-averse, resource-poor. (Cotton is clearly a marginal crop in Uganda, at current prices and yields, and farmers with other options, able to take additional risk, are less likely to grow cotton). Moreover, in Uganda cotton is grown in the drier more marginal areas. In Zimbabwe, land of comparable quality would represent some of the better land farmed by communal farmers; many communal farmers live in Natural Region V which cannot support cotton.

3.3 Efficient use of inputs

In an ideal situation cotton farmers would be able to make a rational decision on the use of inputs if:

- they face real and known prices for inputs and outputs
- they have reliable information on the relationship between input use and seed cotton yields (/quality)
- they are able to purchase inputs relatively easily, when they wish to, and
- they are able to sell their seed cotton relatively easily.

Small-holder farmers in Africa rarely operate under these conditions. Output prices usually depend on market conditions and are not known in time to influence production decisions (although guide prices may be announced for some crops). Input prices may be more predictable, but rural retailers operating in thin markets served by poor infrastructure are often accused of profiteering, and indeed may face very variable costs themselves, such that input prices can vary substantially between tra-

⁸ It is important to consider this aspect, particularly where government or donor subsidy is involved - even if it is not an explicit objective of the commercial cotton companies.

ders, and over the same season. Farmers may have a reasonable understanding of the relationship between input use and yields, but there is always a degree of uncertainty reflecting the weather or other farmer or location-specific factors (such as unforeseen labour constraints arising from illness or heavy demands in another area)⁹. Moreover, specific inputs may not be available, with retailers offering a like product, with a different (and perhaps unknown) effect on output. In many parts of rural Africa it is not easy for farmers to make timely purchases of inputs: retailers may be located some distance away and a farmer may have to visit several outlets (at a cost in time and money) before s/he can make the desired purchase; s/he may not be able to afford to pay cash, requiring negotiation of credit through formal or informal channels; input needs may arise at short notice when they are not available; and so on. The last condition, that farmers are able to sell their seed cotton relatively easily, does seem to apply, at least in Zimbabwe and Uganda at the present time, where competing ginners are anxious to secure access to the crop. Farmers in remoter areas may not face so many choices, and may for instance face transport constraints, but at least these are generally known aspects, which the farmer can factor into her/his production decisions at the start of the growing season.

Clearly, then, these conditions for efficient use of inputs are unlikely to apply in totality. However, information from extension agents, information on prices, and improved infrastructure of the sort that helps reduce uncertainty and transaction costs, will help farmers *approach* these conditions. Even then though, given the residual uncertainty, farmers would be expected to discount expected returns, and hence apply inputs at less than theoretically optimal levels.

It is interesting to use this framework to consider the conditions faced by smallholder cotton farmers in Zimbabwe and Uganda.

Zimbabwean farmers seem to face better conditions on most counts:

- inputs are available in rural areas from the cotton companies, and also through the network of commercial retailers (which is thin but nonetheless gives better coverage than in Uganda);

⁹ Pesticides usually represent a high proportion of cash costs in cotton production. However, there is an important "treadmill" effect here, which complicates the relationship between input use and yields. With on-going, and increasing use of pesticides, resistance sets in - reducing the yield effect and necessitating alternative measures.

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- however, input prices are currently subject to some extreme price variability and uncertainty caused by depreciation of the Zimbabwean dollar, high inflation, and rumours of revaluation;
 - cotton companies offer credit, or sell next season inputs when farmers are paid for their cotton, and make farmgate deliveries;
 - input supply transaction costs are reduced by higher volumes and innovative schemes by cotton companies that link input and output marketing and transportation;
 - rural finance, whilst still a constraint in Zimbabwe, is nonetheless more accessible than in Uganda - and one of the cotton companies even lends cash (rather than inputs) to small-holders with a good track record of repayment;
 - seed cotton prices are not known in advance with certainty - though guide prices are announced; (small-holders are no longer offered forward contracts by the cotton companies because of high rates of default when spot market prices at harvest time were higher); exchange rate changes create considerable uncertainty at the present time;
 - cotton extension systems are reasonably well-developed in Zimbabwe, and many (most?) cotton farmers belong to groups linked to the extension efforts of the government extension service, NGOs, the Zimbabwe Farmers' Union, the cotton companies and input supply companies; these arrangements seem to reduce the potential for input companies to offer partial advice; moreover, farmers have more recent first hand experience of cotton production than they do in Uganda, where production is only just increasing again after a 15-20 year decline.

Given these circumstances, it is understandable that cotton farmers in Zimbabwe make considerably higher use of pesticides and fertiliser than their counterparts in Uganda, and achieve higher yields. Crop management is also better. They typically spray five times, compared with two in Uganda, and achieve yields of 750 kg/ha (seed cotton), compared with around 500kg/ha in Uganda¹⁰.

In rural Uganda, besides from the cotton input scheme, production inputs are not easily available to small-holders. Input retailers in rural areas are virtually non-exi-

¹⁰ To the authors' knowledge there has been no systematic study of farmer cotton yields in Uganda, and acreage is not known with any certainty. Whilst this figure is usually quoted in Uganda, consideration of gross output alongside planting seed distributed, would suggest that yields are even lower.

stent¹¹. Farmers do not have access to reliable information about inputs, and have less recent experience of cotton production on which to draw. The extension service is stretched and currently being restructured. Input prices are neither known by farmers nor predictable, and there are no formal sources of credit for small-holders wishing to purchase agricultural production inputs¹². Farmers are able to sell their cotton relatively easily, but this situation has only recently improved - with an understandably lagged effect on farmer confidence and production.

The cotton input scheme being operated in Uganda clearly has its problems:

- difficulties assuring the timeliness of input delivery
- diversion of inputs by intermediaries responsible for their distribution, or attempts to charge farmers for the inputs at the point of delivery
- inputs given out to non-cotton farmers and cotton farmers going without
- farmers using the inputs on other crops, or selling them
- too few spray pumps with which to apply the chemicals
- farmers do not have the opportunity to make an informed decision based on the cost and benefits of pesticide application
- getting ginners and government to agree to the scheme seemed to depend on assurances that costs to farmers and ginners would be contained; as a consequence, an unrealistic harvest forecast was used (which virtually assured a government subsidy in the form of the loan guarantee) and farmers were misinformed as to who would bear the cost of the inputs¹³
- more efficient producers effectively pay more for their inputs (because they sell more cotton, and a uniform deduction per kg of seed cotton sold is made for the cost of the input scheme) whilst less efficient producers face lower cost inputs.

The scheme is inherently paternalistic in its approach - with the cost of inputs de-

¹¹ A number of donor-supported initiatives are currently trying to rectify this with "stockist" supply and training programmes.

¹² One bank is operating a pilot programme to develop farmer lending methodologies, but its present coverage is extremely limited.

¹³ CDO and UGEA state erroneously that the cost of inputs is met 50:50 by ginners and farmers, and the seed cotton guide price is adjusted downwards to reflect the 50% contribution by farmers. However, there is intense competition for seed cotton, since all the gineries are operating well below capacity, and all are having to meet the costs of loans taken out for rehabilitation and modernisation. Farmers almost always receive more than the guide price and it appears that ginners pay as much as they can afford to secure their supplies of seed cotton.

ducted uniformly from the entire harvest, despite inevitably unequal access. In addition, farmers cannot necessarily obtain the inputs when they need them, reducing their effectiveness and creating additional yield uncertainty. "Leakage" of inputs reduces the intended impact on the cotton crop, and the scheme's critics argue that there is potential for rent-seeking behaviour at all levels. The scheme is institutionally complicated and costly (some of these costs are currently borne by CDO, with World Bank support).

A priori these ingredients would not seem to offer a promising outcome. Yet it is useful to compare the "with" and "without" input scheme situations - since the ideal conditions for rational decisions on the use of inputs clearly do not apply, nor are approached, in Uganda. Box 2 demonstrates how the input scheme does, despite all its imperfections, actually improve many of the conditions for input use and productivity - albeit as a stop-gap arrangement pending the development or emergence of more equitable, lower cost and sustainable systems. (The information in the box is based on the situation thought to prevail - notwithstanding the unacceptably high number of alleged incidents where the scheme does not operate in the manner intended).

Box 2: The effect of the input scheme on Ugandan farmers' ability to make rational decisions on input use

Ideal situation	Without input scheme	With input scheme	Effect of scheme	Comment
Farmer faces real prices for inputs and output	Yes	No	Negative	Under scheme farmer faces lower output price (= disincentive) and free inputs. The result is that efficient producers pay more for their inputs whilst inefficient producers pay less
Farmer knows the technical relationship between inputs and output	Poor information	Better (though not necessarily impartial) information	Positive	Without input scheme, thin input markets and poor information available on selection and correct use of inputs. Limited extension coverage

Farmer knows cost of input in advance	Probably does not	Yes	Positive	Without scheme, poor availability of inputs leads to uncertainty on input costs
Farmer knows cotton price in advance	Knows minimum price (rarely applies)	Knows minimum price (rarely applies)	Neutral	Competition for the farmers' crop results in ginners bidding above the guide price
Farmer can easily obtain and pay for inputs	No	Some farmers can obtain inputs more easily	Positive	Scheme not applied uniformly; some farmers cannot obtain inputs; inputs not necessarily available when needed
Farmer can easily market crop	Yes	Yes	Neutral	Ginneries under-utilised at current production levels

The only negative score in the box concerns price perceptions. Under the scheme, farmers face lower output prices and free inputs. The former shifts the demand curve downwards whilst the latter shifts the supply curve to the right. However, this does not necessarily lead to uneconomic levels of input use. Farmers do not have unlimited access to inputs, so cannot apply inputs to the theoretical optimal point (where the marginal value product would equal the cost of application i.e., until there is virtually no yield effect). However, there is a perverse effect on output. More efficient producers (from the ginning companies' perspective, these would be the farmers they most want to encourage) effectively pay more for their inputs (they sell more cotton, so face a larger deduction), whilst less efficient producers face lower cost inputs.

Figure 1 presents the information graphically. The levy on the output price lowers the demand curve (from D_1 to D_5). At current levels of production (or even if output doubled), the demand curve faced by farmers is fairly elastic - since all the ginners

are operating well below capacity, and are assumed to be paying as much as possible to secure a larger share of the farmers' crop. Export marketing is not likely to pose a constraint at the present time. The "free" inputs shift the supply curve to the right. The objective of the scheme is to raise output over and above what it would have been in the absence of the scheme (Q_1). To merely match former output, the supply curve would have to move from S_1 to S_e . At this point, per unit costs of production have been reduced (because of free inputs) by the value of the "wedge" (difference in price received). If per unit costs of production fall by more than this, the ginner will achieve their objective of increasing output (*ceteris paribus*). The greater the effect on production costs, the greater the increase in output. There are no empirical data on this - but it is not implausible that Q_s (with the scheme) would exceed Q_1 . The input cost in 1998/99 was calculated at 64/- per kilogram of seed cotton, out of the guide seed cotton price of 330/-¹⁴. Production costs are assumed to approach sales price, at current yields¹⁵. Generally, cotton crops in the tropics are very susceptible to pest attack, so pesticides (or other control measures) are considered essential¹⁶. Moving from a long-established absence of pest control, and no pesticide resistance, the yield effect of two sprays (allowed for in the input scheme) could be expected to be relatively large.

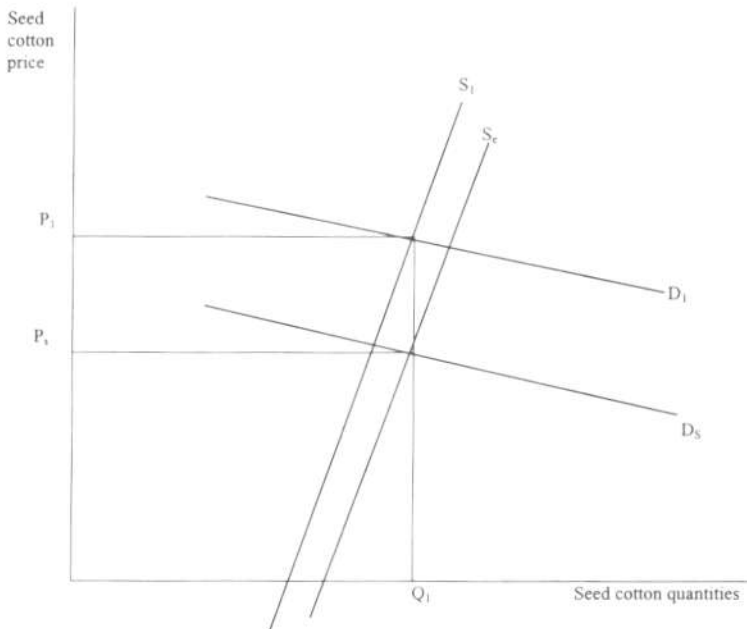
¹⁴ Referring back to the previous footnote, this price was then adjusted downwards when announced to farmers to take account of their 50% contribution to the input costs. In practice, many farmers were able to sell their crop at higher prices as ginner's bid up the price to secure supplies.

¹⁵ It is clear from discussions with farmers and extension agents that cotton production is only marginally profitable at the present poor yields. Tentative estimates of cotton income suggest that a $\frac{1}{2}$ acre plot may only provide gross income (essentially returns to labour and land) of around \$22. Moreover, cotton is regarded as labour-intensive because of land preparation and frequent weeding. However, it appears that farmers are nonetheless willing to grow some cotton as part of a risk-reducing multi-crop strategy because:

- they know they will be able to sell the crop for cash
- prices, although low, are relatively predictable and stable (and do not fall below the guide price announced by CDO at the beginning of the buying season)
- seed cotton sales coincide with Christmas and new school year expenditures, and
- following crops do well in fields previously planted with cotton.

¹⁶ It is not our purpose here to explore the merits of pesticides versus other control measures. However, it is worth recording that part of Lira District in Uganda is a certified area of organic cotton production. Pest control here is largely attributed to the presence of a beneficial black ant.

Figure 1: Supply and Demand of cotton with and without the Ugandan input scheme



Clearly, the effect on output will be larger, the greater the difference between the fall in production costs and the costs of the input scheme. Some of the factors that affect this are listed below:

- operating the scheme so as to minimise costs whilst maintaining standards
 - reducing sources of "leakage" such that "free" inputs reach farmers
 - improving the effectiveness of the scheme by making sure that the inputs are available when needed and can be applied (ie there is adequate access to spray pumps)
 - establishing mechanisms which reward rather than penalise the more efficient producers
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- assuring high levels of repayment by ginners¹⁷
 - making sure that middlemen buying seed cotton do not extract supernormal profits, and reduce the benefit seen by farmers.

Clearly there are several potential sources of inefficiency in the scheme, which would not be present in a system which permitted farmers to make their own expenditure and resource allocation decisions. Yet, as we have attempted to demonstrate in Box 2, it is unrealistic to compare the input scheme with an ideal situation that does not exist in Uganda at the present time.

Unfortunately, the 64/- cost does not reflect the real cost of running the scheme. CDO co-ordination costs are not included, and 64/- was based on an assumed harvest of 150,000 bales of cotton lint (in fact it turned out to be 80,000 bales). The UGEA were only obliged to repay 64/- per kilogram of seed cotton ginned (rather than the amount of the loan irrespective of the volume actually ginned). The loan, moreover, was obtained on concessional terms, with a government guarantee to cover the risk of non-repayment. (Given the rather unrealistic harvest forecast, this amounted to a subsidy). Viewed in these terms the viability of the input scheme appears highly questionable. Yet, the ginners plan to take out a further loan the following season - but this time at commercial rates without a government guarantee. (They are also negotiating commercial insurance cover against crop failure caused by natural events). Moreover, the ginners have a lot at stake and therefore are likely to demand high standards in the execution of the input scheme. Whilst there is an element (some observers would say a *large* element) of teething problems at the present time, these could be expected to be resolved fairly rapidly under commercial pressure.

3.4 Dependence on subsidies

The largest of the two schemes in Zimbabwe is partly dependent on funds provided at low interest under a World Bank support programme - though this now constitutes a small proportion of the loan portfolio. As a consequence input loans are char-

¹⁷ If a default or shortfall factor has to be included, the cost of operating the scheme is likely to increase in subsequent years.

ged at an interest rate of 25-26% (compared with commercial rates in excess of 40% and inflation of roughly 35% in late 1998). The smaller scheme cross-subsidises the programme from its other activities, and also makes use of an Agricultural Finance Corporation loan that is provided on concessional terms. Interest rates for farmers are roughly 29-30% per annum¹⁸.

At the present time, the degree of subsidy in the Ugandan scheme appears to be much more significant. It includes: uncosted inputs by CDO; a 50% subsidy in the form of a government guarantee (for 1998/99); and a loan that was obtained at less than commercial rates. For 1999/2000, the subsidy will be reduced; the ginners plan to obtain a commercial loan, and private insurance to cover a poor harvest caused by natural events (principally weather). CDO co-ordination will continue, and inputs left-over from the previous season (when the element of subsidy was higher) will also be used. In the medium-term, the CDO is supposed to fund all its activities from a 2% cess of the value of cotton exports. This is currently unrealistic (given levels of cotton output) and it is implausible that this situation could be attained by the time the World Bank project ends in December 2000.

3.5 Effect on seed cotton output

It is difficult to assess the impact empirically but there are persuasive arguments in favour of the schemes in both countries.

When the Zimbabwean scheme commenced in 1992/93 it was regarded as a way to encourage small-holder production, and maintain cotton output when large-scale commercial producers were shifting into other more lucrative crops. Small-holder production has not increased dramatically during the 90s (planted area has increased by about 10%) but levels have been maintained, and the small-holder share of total production has increased from 50% (1990/91) to 70% (1995/96). The fact that two of the three ginning companies consider the input programmes worthwhile is a strong indication that they are effective. Although only 25% of small-holders participate in the schemes, they are almost certainly more productive farmers, so their contribution to

¹⁸ It is difficult to estimate a precise interest rate for both of these schemes. Both charge a flat rate, irrespective of the period of the loan, which varies.

national cotton output (ie from communal farmers and large-scale commercial farmers) may exceed 20% (and could be more than 30%)¹⁹.

In Uganda, extension agents suggest that in the absence of the input scheme only 20% of farmers would buy chemicals. Yields are very low at the present time - and farmers are still cautious about cotton, with many having bitter memories of the former voucher systems where payments were late or not honoured. Moreover, cotton seems to be only marginally profitable - and a reticence to use purchased inputs is entirely understandable. In any case, inputs are not easily available, and most farmers could not afford them, even if they wished to use them. Output data (Table 1) do not reveal any immediately obvious impact. Although the harvest improved in 1998/99, this was following an exceptionally poor year (the effects of El Nino compounded by the late realisation that farmers who were expected to pay for seed for the first time would not plant cotton), and the crop in 1996/97 was larger (when seed was still distributed free). However, as in Zimbabwe, the ginners appear convinced that the programme serves a useful purpose - and have demonstrated their commitment to it by a preparedness to take out a commercial loan for the coming season (1999/2000).

Table 1: Seed cotton production in Uganda 1993/94 to 1999/2000

	Cotton lint bales (185 kg) '000s	
1993/94	25	Prior to reforms
1994/95	35	Ginneries privatised
1995/96	56	Cautious supply response
1996/97	110	Growing confidence
1997/98	32	Poor harvest - El Nino
1998/99	82	1 st year of input scheme
1999/2000	150-190	Target (insured for 120 bales only)

¹⁹ All three companies recognise the need to improve access to purchased inputs, and all operate input purchase schemes, whereby farmers can pay for inputs for the next season's crop when they sell their seed cotton. It is argued that many farmers would rather do this, than take out a loan, and they benefit from current season input prices, which are subject to rapid inflation (though if the Zimbabwean dollar is revalued, early buyers will lose out).

3.6 Wider development impacts

The Zimbabwean schemes appear to offer considerably more potential as a springboard for other activities. The group approach builds farmer and community capacities in a number of ways. There is a strong focus on extension; farmers are able to make their own production decisions; and are exposed to financial discipline. They learn to act as a group, and to deal effectively with issues that arise within the group, where it is in their interests to do so. Strong performers are able to borrow cash - and one of the cotton companies intends to wean these farmers off the scheme, and "hand them over" to a commercial bank wishing to expand its rural network. The training invested in these groups is considerable (though shared by a number of parties) - but the benefits are essentially long-term and far-reaching²⁰.

The scheme in Uganda has no such benefits. Its inherently paternalistic nature does nothing to build capacity - with individual farmers or groups. It is essentially a pragmatic, short-run response to rapidly increase the cotton harvest to match the sudden increase in ginning capacity.

3.7 Sustainability

The schemes in Zimbabwe would appear to be more sustainable because:

- the element of subsidy is small
- the schemes are designed to build capacity and vest responsibility with the farmers themselves
- the farmers now enrolled are those who have demonstrated their ability to make repayments, and
- the process permits an evolution - such that farmers can graduate into bank lending schemes.

²⁰ The situation in Mali's important cotton sector is not dissimilar. Groups take on important functions relating to assembly of the crop, input distribution, and payment to individual farmers. There has been a long-lived and on-going training input - but the benefits to the cotton company are seen in lower and transferred transaction costs, whilst the farmer sees greater cash income (because cotton company costs are reduced) and stronger capacity to be proactive as a group on other issues relating to rural services.

None of this is true in Uganda - yet sustainability may still be possible. It depends on:

- ability to contain costs of the scheme and to run it without subsidy
- ability to ensure that inputs reach farmers on-time
- ability to retain farmer confidence in the scheme (largely dependent on the above factors) and hence political commitment to it
- ability to reward more efficient producers.²¹

The encouraging point is that whilst the ginners are footing the bill, they can be expected to be critical task-masters, and intolerant of inefficiency and "leakage". At the present time, the ginners are surprisingly committed to the scheme (surprisingly because the teething problems appear to have been considerable) - but over time, and as the element of subsidy is reduced, there should be inherent pressure from the ginners for a high quality operation.

Even if the Ugandan scheme proves sustainable, its impact will be limited to cotton, and within that, limited to narrow specific technologies. It does not replace the urgent need to strengthen other processes by which farmers can improve productivity, and gain improved access to information and farm inputs.

²¹ In Ghana, a similar scheme operated (though ginners did not compete on farm price amongst one another). It sought to address this problem of perverse incentives in two ways. First of all fertiliser was taken out of the "free input" scheme - and farmers charged directly for it; later, farmers achieving higher yields were paid more for their cotton (though farmers could manipulate this by presenting cotton produced by family or friends as their own cotton). Poulton, 1998.

Box 3: Summary of credit scheme performance

Performance criteria	Countries	
	Zimbabwe	Uganda
<i>Repayment</i>	High: 98%+	Effectively only 50% in 1st year
<i>Farmer participation</i>	53,000 small-holders probably more able farmers	300,000 including many self-selecting resource-poor, risk averse farmers
<i>Efficient use of inputs</i>	No data available but inputs likely to be used efficiently because of: <ul style="list-style-type: none"> • monitoring and extension • farmers pay for inputs • inputs not significantly subsidised 	Evidence of significant "leakage" and inputs not necessarily available when needed in a form that farmers can use (ie too few spray pumps). Perverse incentives which encourage less efficient producers and discourage the more efficient.
<i>Dependence on subsidies</i>	Minor subsidy element only?	Major subsidy in 1st year to be reduced in years 2 and 3. Scheme presently relatively high cost - and may collapse in the absence of subsidy
<i>Effect on seed cotton output</i>	Positive - particularly as focus seems to be on more productive farmers	Effect not clear - ginners nonetheless confident that scheme is necessary
<i>Wider development impacts</i>	Capacity-building with farmers and groups, empowerment	Wider impacts are limited - inherently paternalistic scheme, with benefits related directly to any increased income accruing to farmers
<i>Sustainability</i>	Appears sustainable: <ul style="list-style-type: none"> * subsidy is small * capacity-building * demonstrated ability to repay * process permits further development 	Questionable - unless costs can be significantly reduced, inputs more focused on intended beneficiaries, and dependence on subsidy reduced

4. Input credit for small-holders: wider lessons and discussion

In post-liberalisation Africa, there has been considerable reflection on private sector reticence to provide services previously provided by the state. One of the areas that has suffered is small-holder access to inputs and credit. However, our research in Uganda and Zimbabwe illustrates that there are some very considerable successes - with very high farmer participation - that are significantly funded by the private sector (and are unarguably a private sector initiative). Although both of these case studies focus on cotton, a number of more generic lessons can be drawn. We consider these under three headings below:

- incentives for private traders/processors to offer farmers production credit
- why farmers would participate in such schemes
- factors which influence credit scheme viability.

4.1 Incentives for private traders/processors to offer farmers production credit

The main reason for offering credit is to address some kind of supply constraint:

- assuring supplies of appropriate quality, volume, regularity and price
- reducing costs of acquiring raw material
- keeping markets or plant supplied at levels which assure viability, future market access or desired market share
- protecting long run raw material supply.

Small-holder credit programmes are risky and administratively onerous, and in the absence of any need to improve the supply of raw material (in various ways), traders or processors are unlikely to offer farmers production credit.

4.2 Factors which influence farmer interest in participation in a credit scheme

Farmer interest in credit scheme participation will be influenced by:

- perception of benefits derived from use of inputs and market access
 - scheme offers better/cheaper/easier access to inputs and/or credit
-

- farmer operates in context where s/he is able to plan ahead and willing/able to take some risk

Unfortunately, where there is a recent history of loan amnesties and default without penalty, farmers may not associate participation in the scheme with an obligation to make repayments.

4.3 Factors which influence credit scheme viability

Box 4 provides a summary of the factors which influence the viability of input credit schemes (assuming that such schemes are operated by traders or processors interested in securing access to a particular crop).

Box 4: Factors which influence viability of crop input credit schemes		
Factors/aspect	Effect	
Crop market characteristics		
1. Crop purchase monopoly and no food/farm use of crop	+	*
2. Possible for all buyers/users to form association and no food/farm use	+	*
3. Multiple marketing channels and/or food use	-	
Input qualities		
1. Inputs provided in-kind	+	
2. Limited alternative use or market for input	+	*
3. Returns to input use are greatest for the crop in question	+	*
Commercial/credit context		
1. Farmers treat farm as a business and are integrated into markets	+	
2. History of loan amnesties, default without penalty, subsidised inputs	-	
3. Supportive legal/political/contract enforcement institutions	+	*
Modus operandi of scheme		
1. Group schemes for peer pressure	+	
2. Group or individual schemes backed up by monitoring/good information, support staff, and ability to act	+	
3. Incentives for repayment and penalties for non-repayment	+	
4. Appropriate incentives for field monitors/co-ordinators	+	
5. Training provided to farmers - extension and business management	+	
6. Developing relationship/trust/loyalty through field presence/contact	+	
7. Accessibility of scheme - minimise red tape and transaction costs; organise so location and timing of contact is convenient to farmers	+	
8. Effective and timely monitoring of input use and crop marketing	+	

Note: * denotes killer assumption

The significance of these categories, and particular aspects, is that they need not all be present for a scheme to work, but most schemes will need to incorporate several aspects to ensure a degree of success. For instance, the Ugandan cotton example relied on the buyers forming an association (crop market characteristic 2), but for the scheme to succeed it was also necessary for inputs to be provided in-kind, and to incorporate several measures from the *modus operandi* group (eg., monitoring, extension and accessibility). The scheme can then function, even if the overall commercial context is weak.

The Zimbabwean cotton credit example indicates that even when few favourable crop market and input conditions are present (fertiliser and cash (!) are available on credit in Zimbabwe), it is nonetheless possible to develop strong and viable input schemes. The success of the schemes in Zimbabwe is very dependent on the presence of favourable conditions relating to overall commercial context, and *modus operandi*.

So-called "killer assumptions" are also identified in Box 4, ie. conditions which would be favourable (for the operation of a credit scheme) if in place - but rarely are so. They include: crop purchase monopolies, which are increasingly rare; situations where all buyers can form an association effectively creating a crop purchase monopoly; inputs that have no other use or cannot be put to any other comparably profitable use; and supportive institutions for contract enforcement (the importance of which is particularly stressed by Dorward *et al.*, 1998). The latter is included because although many countries may have appropriate legislation or policy, there are often compelling political economy, implementation and access factors that prevent its effective operation at local-level, or for particular groups. Also, the buyers' association approach may be difficult to apply in practice, because of unwillingness to take joint action. The fact that these favourable conditions rarely apply means that a viable scheme is necessarily dependent on several measures which could be described as best practice in lending to small-scale farmers.

4.4 Best practice in rural credit, in company input schemes and other loan programmes

Box 4 lists a number of carrot and stick measures (under *modus operandi*) - which do not depend on unrealistic assumptions about, for instance, the ability to enforce contracts using legal mechanisms (which even if possible, would probably be very

transaction costs-intensive). Their focus on groups, training, monitoring and incentive systems makes them initially costly - but once in place, farmers can take on a greater share of these costs (groups can act as crop assembly points, and distribution points for inputs - reducing the transaction costs inherent in reaching many small farmers). Moreover, these measures build group/individual capacity so that farmers are able to combine their knowledge of, for instance, land characteristics and agronomy, with information about inputs, and use this to make informed decisions about input use. Without this capacity building, technology packages tend to be inflexible (and therefore not ideal in all situations) or very costly in terms of extension (as seen, for instance, with some of the intensively-managed small-holder outgrower export horticulture schemes in Africa). Nonetheless, the implicit start-up costs, and the fact that the benefits are long-term (and also, far wider than just the crop in question) mean that they are only likely to be attractive to companies able to take a longer view.

Such best practice mechanisms in rural lending are robust to different situations. For instance, they are similar to the measures used by Grameen Bank type schemes - where inputs are not necessarily provided in-kind or targeted to a particular crop. This approach, moreover, yields benefits even where the marketing structure does not demand such an approach. (The cotton company in Mali, for instance, which has a crop purchase monopoly, nonetheless uses virtually all of these measures to reduce transaction costs and increase cotton output). There seems to be a clear lesson here for Uganda too: whilst it is difficult to envisage a viable alternative to the existing scheme given current conditions and circumstances (and this is true, despite all the problems in the operation of the input scheme), it does not obviate the necessity and desirability of investment in longer term measures aimed at more sustainable and substantive improvements in small-holder productivity. At the same time, it may be more difficult still to get commitment to such long-term goals amongst a large group of companies (approximately 30), including many that have only participated reluctantly in the present input scheme.

4.5 When can the buyers' association approach work?

The possibility of creating a buyers' association seems to greatly expand the potential for viable commercially-provided small-holder credit. Yet, on closer examination, there are probably relatively few situations where this is likely to happen. In

Uganda, it was administratively costly and time-consuming to organise such an association (the CDO played a key role in this, with the support of a small number of larger ginners, but the smaller ginners were apparently reluctant partners). The larger ginners have most to lose and most to gain from an increase in cotton output. They were able to exert pressure on the smaller ginners via the CDO (membership of the Uganda Ginners and Exporters Association is compulsory) and also because the larger ginner exporters export some of the cotton ginned by the smaller companies. Moreover, all the ginners face similar problems and constraints - and no single company is privileged in the resources it has to tackle these issues. So although there are a few larger companies (which are substantially better-resourced/cushioned than the smaller ginners), these larger companies are on a fairly equal footing with one another. By contrast in Zimbabwe, a buyers' association (of just three cotton companies) would be relatively easy to organise - but there is less interest in collaboration of this type. The largest company (the former parastatal whose operations dwarf those of the other companies) undoubtedly has privileged access to information about individual farmers, farm output and repayment history. It appears to have judged its competitive advantage best-served by protecting this exclusive access to information (and devising alternative measures to combat the problems encountered in the wake of crop marketing liberalisation). Another factor which limits the potential to replicate the buyers' association approach is that it will only solve the problem of "side-marketing" (farmers taking credit from one company and selling output to another) if the crop in question has no value on-farm or in local markets. This limits potential considerably - mostly to crops which need to be industrially processed (such as fibres and some oilseeds) or which are exclusively produced for export (such as tobacco, in some places).

So, in summary, the potential to use the buyers' association approach to credit seems to depend on:

- existence of mechanisms to exert pressure on laggards/reluctant partners
- a fairly level playing field between buyers (ie comparability in what they stand to gain/lose), and
- crop use options limited to those buyers (no food use or local marketing).

4.6 Lessons for governments wishing to promote private provision of smallholder credit

The Ugandan example does provide an alternative model with application in situations where financial discipline and contract enforcement mechanisms are weak. The Ugandan Government, via CDO, played a critical role in focusing ginners' attention on the scope to collaborate, and in facilitating the formation of an association, and its initial access to funds. It has also contributed concretely through the co-ordination on the input distribution process. The niche for an agent such as CDO was probably there partly because, following liberalisation, most of the ginners were relatively new and inexperienced in the workings of the Ugandan cotton sector. In the medium-term, there should be no need for an input by CDO, or if still involved in input distribution, these services should be provided on strictly commercial grounds. However, during the initial re-establishment of cotton in Uganda, their role has been important, and may have application in other sectors and countries.

Looking beyond these early stages in the rehabilitation of the Ugandan cotton sector, it will be important to shift to more efficient and sustainable means of increasing smallholder productivity. Governments can promote public/private/NGO/farmer partnerships that improve farmer access to purchased inputs - much as they work in Zimbabwe. Building farmer group capacity, as a vehicle for extension, input distribution, crop assembly, and participation in wider consultative processes, is a particularly important part of this process.

Governments should also seek to fill research and information gaps on the use of purchased inputs, including combination packages which exploit synergies between farmer-supplied and external inputs.

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Abstract

It was hoped that market reforms in sub-Saharan Africa would unleash the private sector, such that farmers would benefit from access to new markets and dynamic privately provided services. The reality is that commercial activity has been highly selective and often disappointing. Many farmers face a deterioration in market access and services, including credit. This paper examines the conditions for private sector provision of production credit for smallholders. Drawing on recent field work in Uganda and Zimbabwe, it analyses the performance of two contrasting approaches to small holder credit. These schemes have coverage far in excess of any other formal sector source of credit for smallholders (300,000 and 53,000 farmers respectively). The Zimbabwean scheme is an apparently commercially sustainable text book model of how to run such a scheme. The Ugandan scheme is paternalistic, institutionally complicated and subject to significant inefficiencies in its operation, but nonetheless a potentially significant improvement on the "without scheme" scenario. Of note also is the scale of coverage, and its strong poverty focus. The paper concludes with a discussion of generic lessons for other credit schemes and commodities.

DU CRÉDIT POUR LES PAYSANS AFRICAINS: QU'EST-CE QU'IL FAUT POUR QUE LE SECTEUR PRIVÉ LE FOURNISSE?

Il était prévu que les réformes des marchés en Afrique sous-Saharienne lâcheraient le secteur privé, tant que les paysans auraient accès aux marchés nouveaux et aux services dynamiques provisionnés par le secteur privé. Cependant les activités commerciales sont très limitées et souvent décevantes. Beaucoup de paysans ont de pires accès aux marchés et aux services, y compris le crédit. Cet article examine les conditions qui sont nécessaires pour que le secteur privé fournisse du crédit. Basé sur un travail récent en Ouganda et dans le Zimbabwe, il analyse les résultats de deux approches différentes au crédit pour les petits producteurs de coton. Ces systèmes ont une couverture beaucoup plus grande qu'aucun système du crédit officiel pour les paysans (respectivement 300,000 et 53,000 paysans). Celui du Zimbabwe est apparemment un modèle classique de comment faire marcher le crédit d'une manière soutenable et commerciale. Par contre, le système Ougandais est paternaliste, très compliqué au niveau des institutions et vulnérable aux inefficacités opérationnelles très importantes. Il représente, néanmoins, une amélioration importante par rapport à la situation "sans système". En plus, l'accent très fort sur la pauvreté et la grande échelle de la couverture sont remarquables. L'article se conclut avec une discussion des leçons génériques pour les autres systèmes de crédit et les autres produits agricoles.