CDR Policy Paper
Centre for Development Research
September 2000

Agricultural Policy in Africa after Adjustment

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Published and distributed by Centre for Development Research
Printed in Denmark by Handy Print, Skive
Layout by Carsten Schiøler
Cover photo by P. Cenini, courtesy of FAO
ISBN 87-88467-43-0

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Preface

This policy study was written by a group of senior researchers at Centre for Development Research, Copenhagen, who carried out extensive social-science development research in rural Africa before, during and after structural adjustment. The study is the result of a joint effort and the chapters were written by the following: chapter 1 by Esbern Friis-Hansen, chapters 2, 3 and 4 by Peter Gibbon, chapter 5 by Philip Raikes, chapter 6 by Stefano Ponte, chapter 7 by Esbern Friis-Hansen, Stefano Ponte and Philip Raikes, chapter 8 by Esbern Friis-Hansen, chapter 9 by Jannik Boesen, chapter 10 by Esbern Friis-Hansen and Poul Ove Pedersen, and finally chapter 11 by Esbern Friis-Hansen. Information about the research activities of the authors, contact addresses, CDR working papers and other information can be found on the CDR website: www.cdr.dk

We highly appreciate comments and suggestions from by Henriette Bonnevie (consultant), Jørgen Henriksen, Poul Richardt Jensen and Jørn Olesen (TSA Agriculture, Danida), Flemming Winther Olsen (Danida Agricultural Sector Support Programme, Zimbabwe), Torben Lindquist, (Danish Embassy, Tanzania), and last but not least from Gorm Rye Olsen and Poul Engberg-Pedersen (Centre for Development Research). We also greatly appreciate the support received from the CDR library staff as well as secretarial assistance from Ulla Rødgaard. While the report benefited greatly from the comments, the editor, Esbern Friis-Hansen, and the authors are fully responsible for the content of the final report.

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List of Acronyms and Abbreviations

ACP	African, Caribbean and Pacific (groups of States)
CAISTAB	Caisse de Stabilisation et de Soutien des Prix des Produits Agricoles (Côte d'Ivoire)
CIDT	Compagnie Ivoirienne de Développement des Textiles (Côte d'Ivoire)
CFA Franc	Communauté Financière Africaine Franc
CGIAR	Consultative Group of International Agricultural Research
COCOBOD	Cocoa Board (Ghana)
Cottco	Cotton Marketing Board
Cottpro	Large scale commercial farmer cotton co-operative
CPC	Cocoa processing company
Danida	Danish Agency for Development Assistance
EIU	Economist Intelligence Unit
f.o.b.	Free on board
FAO	Food and Agricultural Organisation of United Nations
FDI	Foreign direct investment
FFV	Fresh fruit and vegetables
GATT/WTO	Global Agreements on Trade and Tariffs/ World Trade Organisation
GMB	Grain Marketing Board
GoZ	Government of Zimbabwe
IDA	International Development Association
IFI	International Financial Institutions (World Bank and International Monetary Fund)
IMF	International Monetary Fund
ITF	Input trust funds
IUCN	International Union for the Conservation of Nature
LEISA	Low external input sustainable agriculture
LSCF	Large-scale commercial farms
MoA	Ministry of Agriculture
MoAC	Ministry of Agriculture and Co-operatives
NAAS	National Agricultural Advisory Service

NEAP	National Environmental Action Plan
NGO	Non-governmental organisation
NRM	Natural resource management
O&M	Operation and maintenance
R&E	Research and extension
SSA	Sub-Saharan Africa
TOSCA	Tanzania Official Seed Certification Agency
T&V	Training and visit extension system
TDT	Technology development and transfer
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNEP	United Nations Environmental Programme
UNICEF	United Nations Children's Fund
WB	World Bank
WWF	World Wide Fund for Conservation of Nature

1. Introduction

External influence on agricultural policy has become a more or less permanent feature of Africa's relationship with the rest of the world. By the mid-1990s, large parts of the agricultural adjustment policy agenda had been implemented in most Sub-Saharan African (SSA) countries. To have a common point of references, this report will use the mid-1980s as the starting point of the structural adjustment programmes while we use 1995 as the date where almost all the structural adjustment agenda had been implemented in almost all of Anglophone Africa. For Francophone Africa, this report will use 1999 as the completion date of structural adjustment, by which date cotton, coffee and cocoa marketing was liberalised in Cote d'Ivoire, and grain marketing in Mali. However, cotton in some Francophone West Africa is still under parastatal control; cocoa in Ghana will be liberalised in 2000.

Policy discussions within SSA itself, as well as in the World Bank and among independent academics, have focused on the formulation of a 'post-adjustment agenda' which takes liberalisation and financial stringency as given but which also accepts that agricultural development requires a wider series of interventions. While taking a broad view of policy changes in SSA, we have selected five countries as case studies for more detailed analysis. These countries, Tanzania, Zimbabwe, Uganda, Ghana and Ivory Coast, have been chosen to represent East, South and West Africa, and both Anglophone and Francophone Africa. Another consideration in the choice of countries has been the authors' own research backgrounds.

1.1 Study aim and propositions

This study looks at agricultural policy in Africa since structural adjustment, with the aim of drawing conclusions about policies for the post-adjustment era. From this study one can see that while some of the changes brought about under agricultural structural adjustment go too far, in many other respects they do not go far enough. The following five propositions, outlined below, guide this report.

Proposition 1. Globalisation has significantly worsened the international context within which an agricultural strategy for Africa must be determined. Structural adjustment has been implemented without taking these major changes into account.

Proposition 2. Liberalisation of state institutions was carried out without a thorough analysis of the functions which they performed (albeit poorly) and an

empirically unfounded belief in the private sector and market forces' ability to take over and improve the performance of these functions. While the elimination of state and parastatal intermediary organisations to some extent increased cost effectiveness, it left a number of areas uncovered as private entrepreneurs find returns too low or risks too high in the absence of institutional or infrastructural support.

Proposition 3. The effects of structural adjustment in the agricultural sector have been socially and geographically skewed, favouring (i) better-off farmers and (ii) farmers living in areas where there is good market access. While this, in part, has been a deliberate attempt to let the market forces determine where it is most profitable to produce, these policies have had serious consequences, in particular for farmers living in areas with high transport costs to market who previously cultivated food crops using subsidised inputs. While structural adjustment policies envisage diversification of production in such areas, this diversification has not been taking place and has not been planned for.

Proposition 4. Vested interests and institutional conservatism within the ministries of agriculture of African countries as well as within the World Bank has meant that the mode of operation of state institutions has not been adjusted adequately to post-adjustment economic realities. Despite the severe reduction in funds and other necessary resources, current agricultural policy still aims at achieving more or less the same as previously- increased agricultural production and exports based on modern innovations and high levels of input-use - despite the fact that devaluations, removal of subsidies and elimination of the institutional channels for input-distribution, have left those aims both unrealistic and uneconomic for a large group of small-scale farmers. To the extent that new functions were defined for the state, e.g. stronger enabling and regulatory roles, little has been achieved in establishing corresponding institutional frameworks and transferring capacity and resources from old to new institutions.

Proposition 5. Reduced access by farmers to agricultural services from state institutions and limited involvement of the private sector have greatly enhanced the potential role of farmers themselves. The enhanced role of farmers and farmer's organisations has been inadequately recognised and provided for in the implementation of structural adjustment.

1.2 Outline of the report

Chapter 2 reviews the background, content and evolution of agricultural structural adjustment, with the purpose of providing a common background. It traces the evolution of the central policy debates concerning African agricultural development during the years of implementing structural adjustment.

Chapter 3 is concerned with the current debate about agricultural sector policy. It focuses on the debate since the mid-1990s on a 'post-adjustment agenda', which takes liberalisation and financial stringency as given but also accepts that agricultural development requires a wider series of interventions. Five issues have emerged as this post-adjustment agenda's main focuses. These are producer incentives, 'missing markets', research and extension, natural resource management and institutional/legal regulation.

Chapter 4 reviews the performance of the agricultural sector under and after structural adjustment, starting with a historical analysis of the process of implementing policy reforms, and proceeding to analyse their performance in Africa in general and in the five case study countries in particular.

Chapter 5 is a discussion of the ways in which Africa's relationship with the global economy is changing. The section then turns to a review of basic quantitative data on the changing global role of African agriculture.

Chapter 6 analyses the changes in agricultural marketing as a result of structural adjustment. It provides a crop-specific discussion of changes in output markets and processing, which covers first crop marketing (food and export crops separately), and then processing and crop quality issues.

Chapter 7 is a model-specific discussion about how African countries have adjusted to the post-liberalisation situation regarding input supply and rural credit. The section starts with a review of four 'post-adjustment models of input markets', then analyses recent changes from input-tied credit to 'rural microcredit and finance', and finally analyses changes in seed-supply systems.

Chapter 8 analyses the reforms of agricultural research and extension and their relevance for solving the problems relating to under-funding, poor management and lack of relevance. The section then reviews new approaches to agricultural research and extension, which have not been part of the reforms.

Chapter 9 analyses the co-evolvement of environmental concerns and structural adjustment. The section goes on to discuss the recent evolution of views of agriculture and environment. The last section reviews the investment and maintenance of agricultural infrastructure in the view of structural adjustment and globalisation.

Chapter 10 analyses the changes in investment and maintenance of infrastructure. The chapter starts by analysing the changing relationship between transport infrastructure and agricultural development. It proceeds with an analysis of the evolution of smallholder irrigation as an example of the chang-

ing division of labour between the state and farmers vis a vis maintenance of agricultural infrastructure.

Chapter 11 concludes the study by relating its findings to the five propositions outlined above and draw out policy implications. The chapter ends by defining future research needs in light of the policy analysis.

2. The Implementation of Structural Adjustment

2.1 Pre-structural adjustment model

Prior to structural adjustment, a 'modernisation' model dominated agricultural sector policy in SSA. This involved efforts to promote rural development through the introduction of 'modern' technologies (e.g. hybrid maize, fertiliser and other inputs) and 'modern' public institutions like co-operatives, marketing boards and parastatals. The introduction of modern technologies was attempted largely on the basis of the public provision of seasonal credit. Co-operatives, marketing boards and parastatals were frequently granted crop-marketing monopolies partly in order to allow credit recovery through crop sales. The main policy emphases were upgrading production systems and increasing agricultural commercialisation. The model was heavily dependent on transfers of high levels of development assistance. Its practical outcomes were generally disappointing. In most SSA countries, growth in agricultural value-added started to fall from the late 1960s onwards.

There is general agreement that during the 1970s insufficient attention was paid to the issues of producer incentives or the financial and environmental sustainability of the changes that were being introduced. However, differences in the interpretation of the key components of 'producer incentives' can be detected within this general pattern of agreement. While one group of commentators has interpreted this largely in terms of producer prices, another has interpreted it in terms of a broader set of conditions encouraging investment (e.g. levels of complementary investment in research and infrastructure). There is general agreement that part of the turnaround in agricultural performance in Africa was due to the deterioration of the terms of trade for its export crops, especially after 1975.

2.2 The early phase of structural adjustment

Against the background of major changes in the paradigm governing economic policy in the developed countries, in 1981 the World Bank unveiled a partial critique of the dominant agricultural policy model in Africa. This centered on the issue of low producer price incentives, a factor that was said to have been introduced into the model through the general subordination of SSA's agricultural development to urban and industrial interests. The subordination of agriculture was implicit in the 'import-substitution' development model,

which, by the way, had been promoted by the World Bank itself in the 1970s. Agriculture was held to have been massively over-taxed through a combination of low administered producer prices and grossly over-valued exchange rates. To set production once more on an upward path, it was necessary to 'get the prices right' by making exchange rates more competitive and by reducing public marketing margins in order to allow producers to be paid a higher share of world market prices (World Bank 1981, 42-55).

Later in the 1980s, the adjustment agenda was generally extended to domestic food-crop marketing and to reductions in subsidies on inputs. In the longer term, it was also necessary to eliminate related 'distortions' such as pan-territorial pricing, input subsidies and restrictions on private trade (ibid. 59-68).

In the 1980s, undertaking major macro-economic reform was not always a precondition for an agricultural sector adjustment loan, and relatively little attention was paid to 'sequencing' (for example, ensuring that producer price increases were carried out before subsidies on inputs were withdrawn).

2.3
Evolution of structural adjustment policies in the 1980s

From the mid-1980s an intensive policy debate emerged around this analysis and its assumptions. Three sets of criticisms were raised. First, doubt was cast on the validity of the claims, which the Bank's 1981 report made about agricultural taxation. Beynon (1989), Ghai and Smith (1987), Lele, Christiansen and Kaderisan (1989) and Lele and Meyers (1989) all appear to demonstrate that, while there was net taxation of the export crop sector in SSA[1], during the 1970s food crop agriculture was actually subsidised rather than taxed. Secondly, doubt was cast on the relationship between levels of taxation and economic performance in export crop agriculture. At least for cotton, Lele, van de Walle and Gbetibouo (1989) appear to have demonstrated that variation in output levels across several African countries in the 1970s and 1980s was less strongly associated with net taxation levels than with differences in trade-offs between cotton and food crops and with differences in levels of input subsidies and the efficiency of producer payment systems.

The third and most important criticism raised of the arguments of the 1981 report was that the latter rested upon the unsupported assumption that there was a significant level of price-related supply responsiveness in SSA peasant agriculture. Far from this being the case, tests of supply responsiveness appeared to show that in Africa, factors such as public investment in rural areas (especially in roads and education) carried more weight than price (Binswanger as reported in Lipton (1987) and Cornia and Strickland (1991), Cleaver (1985)).

1) According to UNCTAD (1998, 157) net taxation of SSA cotton and coffee during the period 1970-1994 was no higher than in Asia or Latin America.

Unlike the other criticisms mentioned, this came from permanent employees of the Bank itself and was therefore more influential.

However, the main policy agenda of those within the Bank who were critical of the 'get prices right' emphasis was to intensify reform rather than to slow it down. In particular, they argued for the elimination of the role of the state in the marketing of both inputs and output, leaving it with the tasks of 'providing market and price information, promoting private and co-operative marketing activity, building market infrastructure, ensuring proper use of weights and measures and quality control for exports [and] establishing a legal framework that permits the development of competitive market activities' (World Bank 1989, 92). In addition, a restructuring of research and extension services and a redefinition of the state's role in providing infrastructure were recommended. Research and extension services should be rationalised and the latter oriented around the 'Training and Visit' (T&V) method (ibid. 100). Rural roads should be maintained through distinct institutional and funding arrangements involving the decentralisation of local authorities and the use of local contractors (ibid. 103). Finally, the same policy statement advocated the privatisation of land ownership on the grounds that this would provide incentives for individual owners to improve their land and at the same time 'allow rural credit markets to develop, because land is good collateral' (ibid. 104).

2.4
Criticism of assumptions behind agricultural structural adjustment policies in the 1990s

The World Bank's 1989 policy statement set off a debate around the merits and demerits of market liberalisation/state withdrawal from output and input marketing, which is still continuing. Even prior to its publication, Lele, van de Walle and Gbetibouo (ibid.) had expressed doubts concerning the attractiveness of some agricultural sub-sectors to private sector traders, especially in remoter areas and for bulkier crops or ones, which are more difficult to process. The same researchers made a similar argument concerning the likely effects of the withdrawal of subsidies and the ending of state involvement in input markets: at least in remoter areas, inputs were likely either to become unavailable or to become so expensive that it ceased to be economic for producers to apply them. Shortly afterwards, the land privatisation policy came under heavy fire on the grounds that no empirical connection could be demonstrated for SSA between individualisation/privatisation and increased private investment, increased smallholder credit consumption or more efficient land allocation (Barrows and Roth 1990). By 1991 research on the land question commissioned by the Bank itself (Migot-Adholla et al. 1991) came to similar conclusions. Subsequently, and following further research (Platteau 1995), land privatisation ceased to be a central part of the agricultural adjustment agenda. On the other hand, despite an equal degree of controversy, the liberalisation of agricultural marketing was to remain one of its central planks.

2.5
Discussions of the achievements of agricultural structural adjustment

From the early 1990s the reform agenda extended further to include the introduction of free market systems for inputs and for export crops (and in some cases new land laws). Producer price increases tended to be the focus of general structural adjustment loans with a wide range of non-agricultural sector agendas, whereas reforms to input and output marketing systems were more frequently the subject of sector-specific adjustment loans.

According to Donovan's (1998) survey of 29 adjusting SSA countries, by 1991 roughly two-thirds of countries had reduced agricultural taxation levels. However, with regard to export crops, declines in international prices meant that real increases in producer prices were generated in only half of countries undertaking these measures. 17 out of 29 had at least 'loosened' food-crop marketing, and 16 had reduced or eliminated fertiliser subsidies. By the time of a major World Bank review of its lending for agricultural sector adjustment in 1996 (World Bank 1996a), it had become clear that almost all of the agenda listed above had been implemented in almost all of Anglophone Africa. Here, according to the review, the agenda had now shifted to increasing private participation in research and extension activity. In Francophone Africa, on the other hand, either a considerable part of export-crop marketing was still under direct state control, or stabilisation funds were operating to mediate local producer-price formation. By 1999 there had been further movement on these issues too, although it was becoming increasingly clear that export-crop liberalisation was being carried out through a much wider variety of modalities than the other reforms discussed.

With regard to food crops, a number of authors have described outcomes similar to those predicted by Lele and her colleagues (particularly Chiwele, Muyatwa-Stipula and Kalinda 1998 on Zambia, Ponte 1999a on Tanzania). With regard to export crops, where greater private trader interest is evident (see below), a continuingly influential line of argument is that, whatever their faults might have been, state or semi-state monopoly marketing organisations fulfilled a series of vital functions which the private sector has shown itself to be incapable of carrying out. Consequently, the absence of mechanisms fulfilling these functions has serious consequences for the economic sustainability of these trades.

On the basis of studies of Tanzania (Gibbon 1999) and Uganda, Cameroon, Nigeria, Ivory Coast, Ghana and Ethiopia (Shepherd and Farolfi 1999), it has been argued that export crop liberalisation has led to a declining supply and use of inputs and to partly related problems of crop quality. In addition, the replacement of monopoly marketing by private trade has been associated with a

breakdown of quality control and a loss of benefits associated with export co-ordination, such as forward selling, sales by tender and sales on a c.i.f. basis. Drawing on a five-country study, Duncan and Howell (1992, 204) support that part of these arguments that refers to input supply. After years maintaining that input supply in SSA in the 1990s had remained at pre-adjustment levels and pre-adjustment prices (most recently in World Bank 1994 a), a recent World Bank publication has also acknowledged that, at least for fertiliser, 'prices have increased steeply, in several places by 100 per cent or more' (Townsend 1999, xxiv).

In Francophone Africa, state or semi-state marketing monopolies fulfilled an additional role, namely price stabilisation. This was justified in relation to the disincentive effects of price instability on producer innovation and investment. Few independent studies of the consequences of the winding down of price-stabilisation mechanisms have been conducted, but the argument for them on efficiency grounds continues to attract strong support from Francophone researchers (cf. Guillaumont 1994; Griffon and Hilmi 1998).

An additional criticism of market liberalisation has been that it still remains to be demonstrated that it has the capacity to supply producers with improved price incentives. Because there has been a significant deterioration in world export-crop prices in recent years, it is hardly a surprise that there has been little room for increases in real producer prices. However, research conducted for UNCTAD (1998, 158) even claims to show that 'since the mid-1980s the ratio between producer and export prices has declined for all products considered here[2] except coffee.' Some limited counter-evidence regarding export crops is cited in Shepherd and Farolfi (ibid.) and in Townsend's (ibid.) study for the World Bank, although the latter also admits that there is no corresponding counter-evidence for food crops.

2) Coffee, cocoa, cotton, tea, tobacco, maize, rice and wheat.

3.
The Current Debate on Agricultural Sector Policy

3.1
Introduction

By the mid-1990s large amounts of the agricultural adjustment policy agenda had been implemented in most Sub-Saharan African countries (see below). While even its advocates had begun to acknowledge that the resulting improvements in output have been patchy and limited (see below), there was a general recognition that adjustment had attained fait accompli status; even for its harshest critics, it was hard to envisage its reversal. At the same time there seems to be widespread resignation to the fact that public financial stringency is also unlikely ever to be reversed. As a result, a partial convergence between critics and advocates has occurred in relation to the formulation of a 'post-adjustment agenda', which takes liberalisation and financial stringency as given but also accepts that agricultural development requires a wider series of interventions. The remainder of this chapter first discusses different views of what these interventions and their underlying principles should consist in, with reference to the five issues which have emerged as the Agenda's main substantive focuses. These are producer incentives, 'missing markets', research and extension, natural resource management and institutional/legal regulation. Other issues such as 'food security', 'sustainable livelihoods' and 'alternatives to high external input agriculture' have entered related discussions but have not featured much in the debates which have emerged out of the literature concerning adjustment policy and what should follow it. They will therefore not be discussed directly here.

3.2
Producer incentives

When the overriding importance for agriculture of price-based producer incentives was first questioned within the World Bank in the mid-1980s, it was in the name of a crash programme of market liberalisation and crop parastatal privatisation. Today, the argument that the latter also fails to address directly many central non-price aspects of producer incentives is broadly accepted.

The price-related issue, which is generally recognised as still needing to be addressed, is export price instability, against the background of an apparently secular decline in world agricultural commodity prices. Anticipating the defining axis around which differences concerning the post-adjustment agenda

revolves, policy proposals advanced to mitigate this problem take the form of advocating market- and institution-based instruments respectively. [3] Two World Bank reports (1996a and an unpublished report cited in Financial Times, September 14 1999) argue that the most appropriate way for producing countries to deal with export price instability is by insuring crop prices on the basis of involvement in hedging and in futures markets. In contrast, Shepherd and Farolfi (ibid.) argue for a more active form of national export co-ordination, involving the collective negotiation of forward sales, shipping rates, and so on.[4]

The major non-price aspect of producer incentives, which is generally recognised as still needing to be addressed, is investment in infrastructure and in developing new agricultural technologies and ways of propagating them. These enter the picture of broader incentives, since they have major risk-reducing potentials. The importance of this issue was first stated systematically by Duncan and Howell (ibid.). By the late 1990s, the World Bank's principal agricultural economists admitted that 'getting infrastructure and technologies right' was at least as important as doing the same with prices (Donovan 1998). The respective policy conclusions again revolve around the market-based/institution-based distinction: while Duncan and Howell suggest a role for the state, Donovan proposes that the solution lies in encouraging the 'local ownership' of infrastructure. This means infrastructure, which is locally administered on the one hand and has private/NGO participation on the other.

3.3 'Missing markets'

Today there is a general recognition that the policy of agricultural sector liberalisation/privatisation has, on its own, failed to generate well-functioning markets for certain types or segments of output, producer credit, inputs or rural transport. 'Missing markets' for outputs are most commonly recognised in respect of food crops in remoter areas (e.g. Cleaver and Donovan 1995, Townsend, ibid., Delgado, n.d., Griffon and Hilmi ibid.), although according to Shepherd and Farolfi (ibid.) a few former SSA export-crop producing regions are also in danger of disappearing off the output market map. Agreement appears to exist that, besides investing in local infrastructure in these areas, the key to creating such markets is to provide some assurance to traders of volume and con-

3) Institution-based alternatives are not necessarily non-market; rather, they assume that there is a variety of institutionally based solutions to different economic problems, some of which may be market-based and others non-market or even 'anti-market'.

4) Forward sales entails selling predicted volumes of the physical crop while it is still unharvested. Normally, sales may be up to five years forward; most such sales take place on a private treaty basis between an exporter and an importer. Futures sales and hedging are operations conducted, normally between importers, in Northern-based commodity exchanges. They involve buying and selling the right to possess certain physical magnitudes of a commodity, rather than physical crop itself, any distance into the future. 'Insurance' presumably involves acquiring positions across more than one type of commodity or financial instrument.

sistency of supply. Commentators working within the World Bank provide little indication of the policies necessary to bring this about, but some institutionalist commentators outside the World Bank have suggested renewed efforts to create co-operative-type 'marketing pools'; according to Delgado (ibid.) 'the key to decreasing the huge transaction costs that characterise rural trade in Africa lies in support of these organisations' (cf. also Griffon and Hilmi, ibid.).

Griffon and Hilmi (ibid.) go on to argue that such 'pools' are also the obvious foundation stone for solving the problem of missing input markets, especially where they can be linked to mutual credit arrangements; a similar argument is implicit in Shepherd and Farolfi (ibid.). Griffon and Hilmi cite examples from Francophone Africa of successful groups or pools of this kind, although they provide little indication of their broader conditions of existence, or in particular how these have preserved such groups from the wide variety of problems, which have traditionally beset primary co-operatives and co-operative unions in Anglophone Africa.

Historically, contract farming has represented a second institution-based approach to solving the problem of missing input markets. Under this system, establishing a local monopoly for buying output provided traders with the security they required to advance inputs on credit. Case studies have tended to show that this security is often more theoretical than real, for in practice it is difficult for traders actually to enforce local monopolies (cf. Stringfellow 1996). A variant on the contract farming model of input supply is suggested in works by Poulton, Dorward and Kydd (e.g. 1997), which suggest that the enforceability of 'interlocking contracts' can be consistent with a degree of local (imperfect) competition, provided that private traders collude with respect to price and the blacklisting of farmers who renege on 'contracts'.

In general, commentators writing on missing input supply markets from a World Bank perspective have suggested further policy changes based on 'completing the liberalisation process'. Townsend (ibid.) for example, maintains that the underlying problem is high input prices and that this can be resolved mainly by removing the remaining restrictions on fertiliser imports and terminating the granting of fertiliser aid. Very similar arguments are advanced by Townsend (ibid.) and Donovan (ibid.) in respect of missing transport markets: the main instruments which should be used to relieve constraints in these markets are the removal of local road tolls and the lowering of taxes on imported vehicles and spare parts.

3.4
Research and extension

The central themes of most contributions to the literature on SSA agricultural R & E, regardless of the author's standpoint, have been that these services are

increasingly underfunded[5] and run down, and that some of their central assumptions concerning agricultural development models no longer hold and require rethinking.

Against this background, commentators linked to the World Bank (e.g. Donovan, ibid.; World Bank 1996b , 1999a 1999b) have developed a sketch of a new model of R & E which is 'pluralistic' and 'demand-driven'. 'Pluralism' refers both to sources of funding and implementing agencies. While there remains a role for the state in organising basic research into staple foods, extension work which exploits the latter should generally be financed through user fees. R & E for industrial and export crops should either be undertaken by private organisations or financed on a full-cost basis out of crop levies. Public extension work could be both pluralized and made more demand-driven through the involvement at all levels of 'farmer groups', ideally in a manner where responsibility for major decisions is decentralised to them. Where such groups do not exist, NGOs can be used to help form them.

Much of this argument (e.g. in Beynon ibid.; World Bank 1996 b) is justified in terms of a distinction between 'public' and 'private' goods, borrowed from welfare economics. According to this distinction, public goods are those where use by one person does not exclude use by others, and where the costs of excluding individuals would be high. Correspondingly, some R & E activities can be regarded as 'public' (and therefore legitimately undertaken by the state) and others 'private' (and therefore best undertaken by commercial enterprises). One World Bank text (1996) refers to veterinary and tractor rental services as falling into the latter category, though no justification is provided for this allocation.

The general difficulty of operationalising this distinction, at least in the crude form stated above,[6] is the point of departure for Griffon and Hilmi's (ibid.) elaboration of a series of reservations to the World Bank R & E paradigm from an institution-based perspective. Besides pointing out that a large number of the 'goods' with which R & E is concerned have a double public(private aspect (e.g. open pollinated seeds), these authors emphasise that levels of local devolution need to take account of issues of critical mass, and that very little is actually known about the implications for extension delivery of decision-making processes within 'farmer groups'. Echoing more general debates on social sector adjustment issues, a problem is also evident in respect of how those groups

5) On underfunding, an exception is Beynon (1998), who argues that spending on R & E in SSA is not significantly lower than in Asia or Latin America, and that it has not fallen significantly in the past two decades.

6) More sophisticated versions of the public-private goods distinction operate with a matrix including 'common pool goods' (e.g., woodland) and 'toll goods' (e.g., satellite TV) as well as unambiguously public or private ones. The axes of this matrix would be excludability and subtractability.

which extension services are most urged to target (e.g. women food-crop farmers) are likely to be able to afford user fees.[7]

3.5
Natural resource management

Neither early proponents of structural adjustment nor its critics were much concerned with natural resources or the environment. When such concerns emerged there was some discussion of the environmental effects of adjustment in Africa, but by the mid-1990s liberalisation and public-sector reduction had become the generally accepted basis for sustainable agricultural development as an integrated part of the 'post-adjustment agenda'. This comprises reform of land, water, forest and wildlife legislation, legal regulation rather than top-down command-and-control administration of resource use and protection, and market-based incentives.

Although land privatisation retreated from the World Bank's central agricultural-sector policy prescriptions in the early 1990s, a 'property rights' focus still at least partly informs its contributions to policy discussion on natural resource management issues. The 'property rights' approach, whereby changes in land tenure are seen as a necessary condition for viable natural resource management (cf. Donovan, ibid.), is now accompanied in World Bank pronouncements by an insistence on the importance of the decentralisation of decision-making and 'participatory' solutions involving communities, 'farmer groups', etc. Contributions from the institution-based policy school broadly accept these accompanying arguments, while insisting that policy should be based on more complex ideas of ownership and use[8] than are encompassed in the 'property rights' literature.

The focus is now rather on issues of implementation, turning around the problem of transferring resources from old to new institutions in the face of all the vested interests involved, and building new institutions, for example national resource rights systems, with vastly reduced economic means. The context is also one of unsolved contradictions between the perceived urgency of environmental problems and the decentralisation of rights over resources and the empowerment of farmers and communities, whom many regard as the main degraders of the natural resources.

The most recent contributions to the debate are, however, turning the latter issue around, questioning the validity of very simplistic and alarmist generalisa-

7) This is particularly the case if it is insisted among other things that the highly resource-intensive T & V extension methodology is the only one appropriate (cf. Eicher 1999).

8) Griffon and Hilmi (ibid.) distinguish use of resources, conditions of access, control of access, norms of behaviour and conditions/rules of transfer, and emphasize the importance of examining the general society(ecosystem relationship.

tions about the nearly catastrophic degradation of the African environment, mainly caused by agriculture. Showing that views of rapid forest destruction and soil mining across Africa are based on very meagre evidence, they argue that the diversity of African farming systems makes generalisation from a few cases problematic, and they call for case-by-case identification of resource constraints and the design of development options requiring primarily the involvement of farmers themselves (Leach and Fairhead 1996; Scoones and Toulmin 1999).

3.6
Regulation

A focus on post-liberalisation regulation has emerged mainly in the light of the discussions touched on above concerning the problems emerging from export-crop liberalisation. More generally, the World Bank first began acknowledging the importance of regulation in the light of controversies surrounding the privatisation process. Its general approach to this question is that, while some regulation is desirable, it should be strongly conducive to private-sector development and not provide a renewed opening for generalised state intervention (cf. World Bank 1994). Missing from World Bank references to regulation is much discussion of its practicalities.

Within the more critical literature (e.g., Shepherd and Farolfi, ibid., Gibbon, ibid.), a clear focus has emerged on the importance of sequencing regulative mechanisms and institutions into policy reform (preferably before liberalisation is undertaken), on providing them with adequate resources, including statutory back-up, and on supporting initiatives which can make regulation simpler and more efficient. At the same time, this literature recognises that regulatory interventions will only be successful if they are also based on a consensus amongst private agents: for example, the (re-)introduction of quality-based price premia in primary marketing for export crops can only become institutionalised as a result of a joint public(private initiative.

3.7
Concluding remarks

The main feature of the policy debate over the last few years is that it has been broadened to include a much wider range of issues. Some of these, like 'missing markets', have been thrown up by the implementation of structural adjustment itself; others have a much longer history but have been drawn into the 'post-adjustment agenda' as it has become recognised that adjustment does not represent a general panacea for agricultural development. It is nonetheless striking that, on the side of the World Bank, most of the assumptions of the version of agricultural adjustment which was implemented from 1989 onwards not only remain intact but are also employed as points of departure in dealing with items new to the agenda.

4. The Performance of the Agricultural Sector under Structural Adjustment

The discussion that follows focuses on the performance of the SSA agricultural sector under structural adjustment, during the 1990s in five specific countries: Ivory Coast, Ghana, Tanzania, Uganda and Zimbabwe. These countries have been chosen because they represent different regions of SSA (west, east and south) and different colonial and post-colonial traditions of agricultural development (Francophone and Anglophone peasant systems, and Anglophone white settler agriculture). This discussion is prefaced by others concerning the implementation of structural adjustment reforms (generally, as well as in the five named countries) and the performance of SSA countries in the 1990s generally.

4.1 The implementation of agricultural adjustment

4.1.1 Ivory Coast

Ivory Coast was the recipient of two Agricultural Sector Adjustment Loans in 1989-91 and 1995-97, focussed mainly on producer prices and internal market liberalisation. The latter loan was preceded by a major structural adjustment loan, whose main macro-economic conditionalities focused on the exchange rate. In common with other Francophone countries, a major (50 per cent) devaluation of the CFA Franc was undertaken in 1994.

In the cocoa and coffee sectors, while there was already extensive private-sector participation in primary buying,[9] liberalisation of the export trade only began with the 1995-97 loan. The parastatal CAISTAB lost most of its role in the coffee export market in 1998. It has subsequently continued to export around 15 per cent of the cocoa crop, and its role with respect to the remainder has been confined to auctioning off export rights to five large and about 35 smaller licensed exporters. A further World Bank structural adjustment grant was made in 1998-9, principally conditioned on the complete liberalisation of the external marketing of coffee and cocoa, and the replacement of CAISTAB by a much smaller entity having a greatly reduced role. Under pressure from the IFIs, in early 2000 the Government announced its intention to dissolve CAISTAB completely. However, coffee and cocoa operators (farmers organisations, domestic traders and, more reluctantly, exporters) have proposed a return to a price stabilisation mechanism, which should be operated by a fully 'privatised' CAISTAB. However, this idea is rejected by the World Bank on the basis that it will not be feasible without government support, which is considered

9) Though prices and margins have, until very recently, been set administratively.

inappropriate. The outcome was still uncertain at the time of writing.

According to Townsend (1999) producer prices for cocoa dropped by 23 per cent of the f.o.b. price during the period 1990-1996/7, while those for coffee and cotton remained at broadly the same levels. However, an IMF report from 1998 (1998a, 61) shows that the producer price for cocoa remained above 55 per cent of the f.o.b. price, and the coffee price at 65 per cent or more, for all but two seasons (1994 and 1995) between 1991 and 1997.

Internal and external food-crop markets and fertiliser markets were liberalised over an extended period ending in the early 1990s. The cotton market has also been liberalised since 1998 in the form of the admission of two private companies, which, together with the parastatal CIDT, operate zonal monopolies (Atse and Bouaffon 1999).

4.1.2 Ghana

Ghana underwent a fairly comprehensive economic adjustment from around 1984, particularly with respect to macro-economic policy, and was something of a World Bank reform showcase in the early 1990s. By this time, food-crop marketing had been completely liberalised and fertiliser subsidies fully removed. But in the export sector, reform of the crucial cocoa subsector had mainly taken the form of restructuring the parastatal COCOBOD and increases in the producer price rather than market liberalisation. Administered producer prices for cocoa remained at less than 50 per cent of the world price during the early 1990s, although they increased to over 50 per cent in 1996 and over 60 per cent in 1999. Primary marketing was subject to partial liberalisation in 1992, but the parastatal Produce Buying Company remains the major player at this level and private traders will not be allowed to undertake cocoa export before the 2000/2001 season (and then will still only control 30 per cent of exports). An independent study by the British commodity company LMC International, conducted in 1996 with World Bank support, pointed to the premium which Ghanaian cocoa commands on the international market, as well as the negative experiences of liberalisation in neighbouring countries with respect to quality control, reliability of deliveries, forward sales and the predictability of export proceeds and taxes. It subsequently recommended a continuation of the state monopoly of cocoa export, a conclusion that the Ghanaian government is clearly happy with.

4.1.3 Tanzania

Tanzania replaced Ghana as a World Bank reform showcase by the mid-1990s, since it showed significantly less 'slippage' than the former in the area of macro-economic reform. In agriculture, food-crop marketing was fully liberalised by 1990 and fertiliser and other input subsidies phased out and their marketing liberalised by 1994. This was in line with the conditionalities of an agricultural

sector adjustment loan covering the period 1990-93. The first steps to liberalise coffee-marketing were taken in 1990-91, and liberalisation in this sector has now largely been completed. Cotton-marketing liberalisation was undertaken much more quickly and in a more comprehensive manner in 1994-95. Over the first two to three seasons there were significant associated changes in producer price shares of world market prices for both crops, not least as a result of the fact that co-operatives competing with private traders now had to pay cash.

4.1.4 Uganda

Uganda was also normally considered an exemplary reformer during the 1990s, again mainly as a result of its macro-economic policy. Agricultural conditionalities covering producer prices and internal and external market liberalisation were a feature of both general structural adjustment loans prior to 1990 and a sector adjustment loan between 1990 and 1996. Food-crop marketing operated under an effectively liberalised system even prior to adjustment, and input subsidies and controls on input marketing have also not been a significant feature for many years. Coffee, overwhelmingly the main export crop, was comprehensively liberalised in 1991. By 1996 the parastatal Coffee Marketing Board no longer occupied a significant role in any stage of the coffee chain. Over this period, the producer share of the f.o.b. price is said to have increased from around 30 per cent to 65 per cent (World Bank 1999c).

4.1.5 Zimbabwe

Zimbabwe first adopted structural adjustment at a relatively late date (1990), and until around 1995-96 was regarded by the World Bank as having a relatively favourable macro-economic policy, despite continuing high fiscal deficits and inflation. Food-crop marketing and input supply were liberalised in 1993, although the now commercialised parastatal Grain Marketing Board (GMB) has continued to intervene as a buyer and seller of last resort,[10] and an official price ceiling on maize meal was re-introduced in 1997.[11] One of the two principal export crops, tobacco, has always been marketed via private structures, but cotton was under parastatal control until 1994. Its subsequent liberalisation has been a controlled one in so far as only one new private player is operating.[12] Unlike in Ivory Coast, the three main players in the Zimbabwean cotton market do not operate formal zonal monopolies.

Policy debates on adjustment in Zimbabwe have sometimes been intertwined with those on the highly sensitive subject of land reform. This subject owes its

10) Muir-Leresche (1998) maintains that GMB has in effect failed to reconcile its commercialization with its status of buyer, and especially seller of last resort. During the 1997-98 maize shortage it sold stocks mainly on Zambian rather than Zimbabwean markets.

11) This was phased out at the end of 1999.

12) Besides this new entrant (Cargill), the privatized former Cotton Marketing Board (Cottco) and the former Large Scale Commercial Farmer cotton cooperative (Cottpro) are active at the primary buying, ginning and export stages.

sensitivity to the racially skewed pattern of land ownership. At independence in 1980 a target of resettling 162,000 families from the African 'Communal Lands' on European-owned 'large-scale commercial farms' (LSCFs) was set, but by 1990 only 52,000 had in fact been resettled. This situation remained unchanged until 1997, when the government proposed the compulsory acquisition of around half the remaining LSCFs. Initially, few details were published with respect to timing, purchase prices, or finance and selection criteria. Eventually, in April 1999, a strategy was agreed, with donor support, to acquire approximately 20 per cent of the originally proposed number of farms and to settle 34,000 households on them, on the basis of 'participatory planning and implementation methods', 'market-driven' as well as 'beneficially initiated' resettlement models, and the incorporation of a property-rights dimension into the programme. In early 2000, the government included two controversial provisions in the proposed new constitution: (i) the highly unpopular provision to allow president Mugabwe to stand for another term and (ii) a popular provision to redistribute half of the LSCF without payment of compensation. However, the referendum was rejected at the ballot box in March 2000. This led to a government endorsed but legally unfounded occupation by so-called 'war-veterans' of more than 700 LSCF during April 2000.

4.2
Performance in SSA generally

The principal indicators of agricultural performance towards the second decade of adjustment paint a depressing picture. Whereas in the decade 1980-90 real agricultural growth in SSA was only 2.3 per cent/year, in the period 1989/91-97 it increased slightly but only to 2.6 per cent/year (based on FAO 1997, 35)[13]. Food production increased by 2.7 per cent/year over the same period (ibid., 33). It is not particularly meaningful to cite a corresponding generic figure for export-crop production, as different export crops displayed markedly different trends. Because population increased by 3.0 per cent/year over the same period, per capita agricultural and food production both registered falls. An important difference between the otherwise apparently similar two periods is that there was a greater differentiation in performance between countries in the latter. In the 1980s only three SSA countries had agricultural growth rates of over four per cent/year; in the later period, twelve countries have achieved this, including two of the countries considered here (Ghana and Zimbabwe). Those countries experiencing stronger growth were concentrated in the western Sahel region.

13) The statistics on food production have in the past been shown to be notorious unreliable, and in particular the FAO food production statistics (Raikes 1988).

4.3
National performance in the case study countries

4.3.1 Ivory Coast.

The major changes detectable in Ivorian agricultural production during the period 1990-96 were a steady rise in production from the liberalised food-crop sector, and a sharp rebound in cocoa and coffee production following the devaluation of the CFA Franc in 1994. This rebound followed periods of stagnation in cocoa production and a decline in the production of coffee. According to the IMF data reported in Table 1, production of the five main cereal crops in Ivory Coast (rice, maize, millet, sorghum and fonio) increased by an average of 4.6 per cent/year during the period 1990-96. Data for the production of other food crops show a corresponding rise. These increases significantly exceeded population growth, which increased at 3.1 per cent/year. However, FAO data for the overlapping 1989/91-97 period give a rate for food-crop production-growth lower than for population growth, at 2.2 per cent.

Table 1:
Production of major crops, Ivory Coast 1990-96 ('000 tons)

	1990	1991	1992	1993	1994	1995	1996
Main food crops	1154	1261	1306	1338	1389	1439	1512
Cocoa	781	808	765	813	812	1052	1105
Coffee	285	199	257	150	126	189	186
Cotton	242	261	194	239	258	210	217
Bananas	146	174	175	242	202	223	210

Source: IMF 1998a

Cocoa and coffee marketing remained under the control of a common parastatal, CAISTAB, during the period for which data is given above. It appears that there was an element of bias toward the provision of incentives in favour of cocoa rather than coffee farmers through CAISTAB pricing policies, which probably accounts for the greater stability of cocoa production prior to the 1994 devaluation. While production of both crops grew spectacularly after devaluation, cocoa broke new records while coffee recovered less than half the ground lost between 1990 and 1993.[14] For the period 1990-96 as a whole, cocoa production grew by 6.5 per cent/year while coffee production declined by 1.7 per cent/year. Cotton production, which was managed under very similar parastatal arrangements, declined by an average of 0.4 per cent/year.

14) From 1988 to 1994 cocoa production, though stagnant, was itself spectacularly higher than in the early 1980s. The increase around 1988 is generally attributed to the widespread diffusion of higher yielding hybrid varieties.

According to World Bank data (Townsend 1999), fertiliser consumption in Ivory Coast increased by 75 per cent during the period 1990-94. IMF data on fertiliser imports do not fully support this picture, but they do show a significant rise in imports between 1990-93 (average import value US$ 22.4m/year) and 1994-96 (average US$ 42m/year), which is only partly accounted for by increases in the world fertiliser price. World Bank data also show an increase in cereal yields of 26.6 per cent between 1979-81 and 1995-97, albeit from a very low base of 869 kg/ha (Townsend, ibid.). However, for reasons, which are not clear, cocoa yields moved in the opposite direction, from 642 kg/ha in the period 1987-90, to 561 kg/ha in 1991-97 (IMF 1999, 68), though these yields remain roughly 25 per cent above the world average.

4.3.2 Ghana

After its spectacular recovery in the 1980s, production of cocoa, Ghana's only significant export crop, increased steadily during the 1990s at an average annual rate of 8.2 per cent. Food-crop production also increased over the same period, by 4.1 per cent/year for the main food crop cassava, and by 3.0 per cent/year for the next seven most important food crops (plantain, cocoyams, yams, maize, sorghum, millet and rice). The latter increases are respectively slightly above and just below the annual rate of population growth, which was 3.1 per cent. However, FAO (1997) gives a much higher average annual rate of growth for food-crop production for the period 1989/91-97, namely 6.9 per cent.

Table 2:
Production of major crops, Ghana 1990/91-1997/98 ('000 tons)

	90/91	91/92	92/93	93/94	94/95	95/96	96/97	97/98
Cocoa	293	242	311	240	290	403	320	390
Cassava	5702	5662	5972	6025	6611	7111	7150	n/a
Other major food crops	6543	5870	6922	5986	6969	7420	7507	n/a

Source: Ghana Quarterly Digest of Statistics 1999/1

No data were available on input availability or consumption, although various sources state that improved supply and a greater use of inputs played an important role in the expansion of cocoa production. Cocoa yields improved strongly from the period 1987-90 (average 274 kg/ha.) to 1991-97 (average 334 kg/ha.), although they still remain well below world average yields. Yields for cereals also improved, although cereals represent only around 10 per cent of total food production. Cassava yields increased from 10.7 tons/ha. in 1991-93 to 11.9 tons in 1994-97.

4.3.3 Tanzania

Despite the extensive adjustment process within agriculture, with the exception of two export crops (cashew nuts and tobacco), crop production during the 1990s has been disappointing. As Table 3 shows, according to Tanzanian data, production of the four principal food crops (maize, paddy, wheat and cassava) grew by an average of 2.2 per cent/year from 1990/91 to 1997/98. FAO data for the same crops for an overlapping period (1989/90-1997/98) show a negative average growth of 0.4 per cent/year. Since population grew at 3.3 per cent/year, the shortfall was made up by increased food imports. Data for these are available only for the period 1990-95, but they show an average rise of 22 per cent/year in dollar value terms, reaching US$ 194m. in 1995 (World Bank 1998, 17).

Table 3:
Production of major crops, Tanzania 1990/91 to 1998/99 ('000 tons)

	90/91	91/92	92/93	93/94	94/95	95/96	96/97	97/98	98/99
Main food crops	4388	4250	5015	4247	4857	4795	4600	4894	n/a
Coffee	38	52	56	49	44	50	42	38	43
Cotton	41	77	69	48	44	84	85	70	36
Tea	18	20	21	22	24	25	19	26	25
Cashews	28	41	42	47	63	82	67	93	107
Tobacco	6	17	23	24	18	28	35	52	38
Sisal	36	36	24	31	26	43	30	20	15

Sources: World Bank 1998; Bank of Tanzania, Economic and Operations Report 1999

While production of tobacco and (particularly) cashew nuts has risen encouragingly since liberalisation, the pattern for most other export crops seems to be for a sharp rise in production for around two seasons after liberalisation, followed by a return to earlier levels. This suggests that liberalisation may be associated with a 'once and for all' type of supply response, corresponding to the (re-)monetisation of producer payments following the transition from (state-backed) co-operative monopolies to free competition. The main difference between tobacco and cashew nuts on the one hand and the other export crops on the other appears to be that in the former two cases a functioning private trader-based input-supply system appears to have emerged.[15] Especially in the case of cotton, the input-supply system had clearly broken down already by the

15) According to reports in the Tanzanian press, however, this seemed to be in the process of breaking down for tobacco from 1998 onwards, a fact possibly underlying the fall in production in the 1998/9 season.

1997-8 season. Liquid insecticide availability, which had stood at an average of 427,000 litres in the last pre-liberalisation and first two post-liberalisation seasons, declined to 253,000 litres in the third post-liberalisation season and 94,000 litres in the fourth (Gibbon 1998a, 35). Together with other factors, this contributed to a decline in cotton quality. According to Townsend (1999), the share of the average world unit price commanded by Tanzanian cotton exports fell by 10 per cent over the same period. It appears also to have contributed to a decline in cotton yields, although data on the latter are probably not particularly reliable. Comparing World Bank data from 1991-95 with his own for 1996-98, Gibbon (ibid.) shows an apparent decline from an average of 591 kg seed cotton/ha to one of 420 kg. Townsend (1999) reports a decline in cereals yields over a much longer period (1979-81 to 1995-97) from 1911 kg/ha to 1317 kg/ha (31.1 per cent). This implies a decline in the use of other inputs.

Systematic time-series data on this question are lacking, but the scattered material, which does exist, appears to confirm this interpretation. Ponte's (1999a) data for fertiliser use for maize production and agro-chemical use for coffee production in Songea District show a 24 per cent decline in chemical fertiliser volumes applied and a 33 per cent decline in agro-chemical use between 1990/91 and 1994/5. Use of fertiliser in tobacco cultivation also declined in Songea. An almost identical decline in chemical fertiliser application (22 per cent) is reported in Townsend (1999).[16] According to Ponte (ibid.) this decline did not appear to be compensated by increasing levels of natural fertiliser use.

4.3.4 Uganda

During the 1990s Uganda experienced a major success story with regard to coffee, overwhelmingly its main cash crop. Between 1990 and 1997 production of this crop grew at an average of 12.8 per cent/year. In literature put out by international financial institutions, the main factor in explaining this growth is increases in producers' share of the f.o.b. price, which is said to have increased to around 80 per cent by 1999 as a result of free competition. In literature from organisations monitoring the international coffee trade, however, the main emphasis is placed instead on the introduction of new high-yielding hybrids through a Ministry of Agriculture Farming Systems Support Project dating from 1990 (van Dijk et al. 1998). It is also likely that there has been some smuggling of coffee into Uganda from Robusta-growing areas in the neighbouring countries of Tanzania, Burundi and Rwanda. Official production of Robusta in Burundi fell from an average of 33,000 tons to an average of 23,600 tons between 1989-91 and 1995-97, and in Rwanda from 30,000 to 15,600 tons over the same period. Obviously, even if the whole of these differences ended up in the Ugandan market, they would nevertheless only account for a fraction of Uganda's increase in production.

16) The hypothesis of a fall in consumption is also supported by import data. During 1990-93, imports averaged US$ 14.8m/year; between 1994 and 1997, after a steep rise in the world price, they averaged US$ 16.5m/year.

Table 4:
Production of selected crops, Uganda 1990-97 ('000 tons)

	1990	1991	1992	1993	1994	1995	1996	1997
Coffee	129	147	110	144	198	181	287	220
Main food crops	15100	15252	14956	15897	15238	16180	16674	16051

Sources: World Bank 1993a Vol. 2; IMF 1998b; FAO 1997

On the other hand, production of Uganda's nine main food crops (bananas, cassava, sweet potatoes, Irish potatoes, maize, finger millet, wheat, pulses and oil seeds) grew by an average of only one per cent/year over the same period. Production of certain key food crops like cassava actually fell considerably. [17] FAO (1997) data for the same period give an almost identical food-crop average growth rate between 1989/91-97 of 1.1 per cent. Population growth over the same period averaged 3.5 per cent/year, implying that deficits were made up by food imports. However, data on the latter are not readily available.

Nor are any data readily available on input consumption after the early 1990s, when a World Bank report (1993 Vol. 1, 60) stated that imports of inorganic fertiliser were only 2000-2500 tons/year, and that 'the private sector considers the financial risks involved in importing, stocking and selling agricultural inputs…too great to attract them into...business'.[18] There is no reason to suppose that the situation has changed subsequently. Townsend (1999) reports that cereals yields fell from an average of 1555 kg/ha in 1979-81 to 1331 in 1995-97. By contrast, FAO data on coffee yields show an improvement from an average of 578 kg/ha in 1989-91 to 842 in 1995-97. These figures are surprisingly well above international averages and four or five times higher than in Africa's largest Robusta producer, Ivory Coast.

4.3.5 Zimbabwe

As noted earlier, Zimbabwean agriculture retains a dualistic structure, with the LSCF subsector producing around 90 per cent of all marketed production and a majority of all major export crops except cotton. The main Large Scale Commercial Farmers (LSCF) crop is tobacco, whose production grew at an average rate of 2.7 per cent/year between 1990/91 and 1997/98, though with a peak in 1992.

17) Statistics for cassava production are likely to be highly prone to uncertainty. It's hard to rely on cereal figures, and cassava production is even more difficult to assess.

18) The report made no mention of inputs imported for the coffee sector, presumably implying that there were none. A World Bank project document (Uganda Cotton Subsector Development Project UGPA 2977) from the same period stated that cotton insecticide consumption was only 80,000 litres/year.

Table 5:
Production of selected crops, Zimbabwe 1990/91-1997/8 ('000tons)

	90/91	91/92	92/93	93/94	94/95	95/96	96/97	97/98
LSCF								
Tobacco	152	169	185	162	166	169	162	179
Cotton	123.2	40.5	79.8	70.7	36.4	73.1	80.4	90.3
Maize	566.5	245.8	878.3	1012.4	440.2	922.0	738.4	690.5
Communal Lands								
Cotton	137.9	35.7	134.5	110.8	56.1	157.6	197.8	182.5
Maize	1019.3	115.2	1133.6	1313.8	399.4	1687.0	1453.8	727.6

Source: Zimbabwe Ministry of Lands & Agriculture Statistical Bulletin, March 1999

Table 6:
Yields of selected crops, Zimbabwe 1990/91-1997/8 (kg/ha)

	90/91	91/92	92/93	93/94	94/95	95/96	96/97	97/98
LSCF sector								
Cotton	1595	768	1687	1760	1078	1827	1756	1921
Maize	3237	1607	4436	4364	2333	4498	4700	4140
Communal Lands								
Cotton	700	195	676	612	312	724	740	764
Maize	1101	158	1090	1124	330	1268	980	688

Source: Zimbabwe Ministry of Lands & Agriculture Statistical Bulletin, March 1999

Cotton and maize production on LSCFs and in the communal lands fluctuated spectacularly during the 1990s as a result of changing weather conditions. Both were especially severely affected by the drought of 1991/92, the worst of the century. This makes the calculation of average rates of growth somewhat meaningless, particularly for maize. The LSCF share of total maize production appears to have continued to fall in the 1990s, from 43 per cent in 1990/91 to 1993/4 to 38 per cent in 1994/5 to 1997/8. The share of total production of cotton from the communal lands has increased spectacularly over the same period.

Nonetheless, there is little sign of an erosion of differences in yields between the two sub-sectors. Maize yields on the communal lands actually fell as a per-

centage of LSCF maize yields, from 27.5 per cent in 1990/91-1993/4 to 20.8 per cent in 1994/5 to 1997/8. Cotton yields from the communal lands meanwhile marginally increased as a percentage of LSCF yields between the two periods, from 37 per cent to 38.6 per cent. The different trajectories for maize and cotton reflect the fact that a functioning smallholder input provision system has survived in the cotton sector, with credit recovery rates of around 90 per cent (Goodland and Gordon 1999b); this has not been the case for smallholder maize.

4.4 Concluding remarks

Although it is difficult to draw firm conclusions concerning the effects of policy change for the agricultural sector in Africa, two general points seem to emerge. The first is that food-crop production in almost all countries has responded rather disappointingly to adjustment. This has particularly been the case in areas located far from major markets, where policy reforms have withdrawn subsidies for input, credit and transport, while market prices for food crops have not increased. A second is that, where success stories exist, they are mainly in the export-crop sub-sector. On the other hand, they are not in all export-crop sub-sectors, and their presence or absence does not seem to follow automatically from market liberalisation. While liberalisation was associated with successes in the Ugandan coffee and Zimbabwean cotton sub-sectors, two other export-crop success stories, cocoa in Ivory Coast and Ghana respectively, has been associated with sub-sectors where there has been relatively little liberalisation until recently.

5.
Changes in the International Political and Economic Environment

This section very briefly looks at how Africa's relations to the global economy are changing, including trends in markets for Africa's agricultural exports. It then considers some of the ways in which this affects current African agriculture and policies towards it.

5.1
Globalisation and Africa

The term 'globalisation' is used in a number of ways, all of which refer to the increasing integration of the world economy, society and culture. Most also discuss the degree to which this reduces the capacity of national states to follow policies which diverge from those of international capital and institutions. Whatever the conclusion on that score for major capitalist countries, some of which retain far more power than the more extreme versions of 'globalisation' imply, there can be little doubt that most African countries have lost a significant proportion of what little policy autonomy they ever had. In terms of national economic regulation, they have been under pressure both from the global deregulatory forces expressed through WTO rounds, and from the more specific imposition of the 'Washington consensus', through structural adjustment and IFI conditionality. The following subsections will very briefly discuss the major issues of globalisation in relation to Africa.

5.1.1 Explosive growth of international financial markets

Explosive growth of international financial markets and of complex financial instruments -derivative from both commodities and basic financial assets - leads to daily financial flows of massive size, subject to tidal swings reflecting both 'herd behaviour' of investors and its institutionalisation in a pattern of 'technical' financial management among major investors, which builds upon following (and in so doing aggravating) price trends and volatility. Africa has not felt the full direct force of such processes, as for example in the crises in East Asia and Latin America, mainly because large-scale financial investors have hitherto shown little interest in tropical Africa. Africa has however suffered from the impact of the Asian crisis on international commodity prices, from a generalised flight of investors and investment from 'emerging markets' in its aftermath and from increased import competition.

Although Africa may not have felt the full force of the Asian crisis, and its Latin America offspring, Africa does feel the full weigh of price volatility in com-

modity markets. For example, in the case of coffee, the final eight calendar years of ICO activity (1982-89) were characterized by monthly nominal price variability of 14.8 per cent, which increased to 37 per cent in the 1990-97 period . Price variability, however was not caused by deregulation alone, but also by another of the defining features of the coffee market in the 1990s: the dramatic increase of speculative activity. According to Rabobank International, in 1980 the amount of coffee traded in the futures market was only around four times the coffee traded in the physical market. By the early 1990s, the ratio had risen to 11 times . Although futures markets allow market transactors to fix their prices in advance of delivery, therefore allowing them to hedge their price volatility risk, they lose much of their hedging function when the price of the futures contracts it too volatile, as it is the case of coffee. The volatility of futures prices is itself due to increased speculative activity in relation to the increased interest of investment funds in commodity markets. Because managed funds operate on the basis of trend-following, 'trigger signals' (which may not necessarily be linked to the actual conditions of supply and demand) tend to cause larger movements in and out of the market than if the market was operated by the coffee industry alone .

5.1.2 International direct investment flows

International direct investment flows have grown rapidly since 1980, though only about one quarter as fast as financial flows. Once again Africa has played a small and declining part in this, receiving only about 4 per cent of the total in the period 1990-98, compared with 11 per cent in 1975-82 and 9 per cent in 1983-89 (UNCTAD 1999: Chart 12, p118). In general, world FDI (foreign direct investment) seems increasingly concentrated within the 'triad' of North America, Europe and East Asia (just Japan in some versions).

5.1.3 International trade

International trade, both in aggregate and as a proportion of world production, has risen since 1980 and continues to do so, though at a lower rate than FDI. In part this seems to have been fuelled by advances in transport and communications technology, and in relation to that, the geographical dispersion of production by multinational corporations. Thus an increasing proportion of international trade has been internal to MNCs, though a more recent trend is for linkages along a commodity chain to be made through contractual arrangements, which assure control without ownership. The volume of trade in agricultural commodities has also risen over the same period, while, as discussed below, long-term price decline has continued.

5.1.4 Deregulation

Deregulation is seen by some as an element of globalisation, by others as an underlying condition for it. The dismantling since 1980 of large parts of the national-state economic regulatory systems set up after 1945 was specifically

aimed at increasing international integration. Its success both strengthened the forces in favour of further liberalisation and placed more pressure on those against it. Much of what is referred to as 'deregulation' seems in fact to be 're-regulation' (think of the 25,000 pages of 'deregulations' in the final draft of the Uruguay round agreement), and highly one-sided in practice. The Uruguay Round and WTO have been most successful in reducing or eliminating direct tariffs and the cruder sort of non-tariff barrier - forms of protection used by the poorest countries with the least sophisticated institutional structures. They have been least effective in relation to 'lawyer-intensive' forms of protection, like anti-dumping duties, which have replaced tariffs as the most important form of industrial protection for developed countries. These have actually grown in extent since Uruguay, with adoption by a number of the richer 'emerging' countries, but are probably beyond the institutional capacity of most tropical African countries, where even relevant to them. Thus Africa has lost a higher proportion of its original effective capacity to protect its markets than have other parts of the world.

5.1.5 Technical advances in transport, information and communications

Technical advances in transport, information and communications can similarly also be seen as elements of globalisation, or as pre-conditions which have in turn been stimulated by it. Subsumed here is precise control of engineering operations, stock-control and the combination of complex production systems. These have allowed the development of new mechanisms for controlling quality and timing of delivery, making new forms of FDI viable and for providing the detailed, up-to-the-minute information on which the financial markets depend.

5.1.6 Concentration

Globalisation is not in any sense a process of equal spread around the globe. On the contrary a huge proportion of global economic activity is concentrated in specific nodal areas (notably the 'triad' of north America, Europe and East Asia) and the transport or communication lanes between them. This in turn generates enormous disparities of impact both between and within countries. With technical advance in transport, economies of bulk transfer are so huge that it costs less to ship goods halfway around the world along the main shipping lanes than a few hundred kilometres off them - and even less in places where roads are impassable during the rains and jarringly pot-holed for the rest of the year, as in much of rural Africa. Similar concentrating processes operate still more strongly in communications, as regards both scope and reliability. This in turn affects the direction of direct investment flows and finance. Where agriculture is concerned, the high cost and unreliability of transport and communications in Africa confines investment in fast-growing 'new' international markets (like off-season or speciality fresh produce) to a very few, former (or still) white-

controlled, areas where there is adequate infrastructure. With small and dispersed economies, poor infrastructure and limited or lacking industrial exports, the rapid increases in foreign trade and foreign direct investment have largely passed Africa by.

Financial and bargaining powers are also highly, and increasingly, concentrated in the global economy, as regards not only transactions but the regulations (and 'deregulations') which control them. The bias in Uruguay Round deregulation has been mentioned above. Increasing concentration in world income has also combined with developments in food retailing and its regulation to generate a shift in global commodity price patterns favouring elite products, high quality levels and reliability in delivery with increased price premia and correspondingly discounting small lot-sizes, poor or unreliable quality and 'standard' product types.

5.2
World commodity trade and markets

There is no doubt that real prices of agricultural commodities have fallen drastically since the 1970s, though this can sometimes be hard to extract from available information. For example, the World Bank's October 1999 issue of the quarterly 'Global Commodity Markets' presents, on its first summary page, a figure, which seems to show that the price index (1990 = 100) for 'Non-energy Commodities' has actually risen slightly for most of the period since 1980, despite a significant fall since 1995/6. This is somewhat misleading, since the figure shows current price indices, thus ignoring significant inflation, especially during the 1970s and much of the 1980s. Tables 7 and 8, taken from the Appendix of the same publication, show how much difference this makes.

From Table 7 one could derive the misleading impression that commodity prices have in all cases doubled or tripled from the 1970 level, fallen somewhat from the 1980 level, but in most cases risen from the low of 1990. But this impression does not survive transformation into real dollar price terms, as shown in Table 8.

Here a very different picture emerges. Commodity prices in the late 1990s are mostly between 50 per cent and 60 per cent of the 1970 and 1980 levels, while the seemingly clear price increase since 1990 largely disappears. Indeed other compilations make the price fall significantly greater.

Agricultural commodities, which account for about 70 per cent of 'non-energy commodities', have fared slightly better than the total, since the minerals and metals which make up the remaining 30 per cent have fared even worse in price terms. Agricultural commodities exported from Africa, fall mainly under

Table 7:
Weighted indices of commodity prices and inflation – Current Dollars

Commodity/Group	1970	1980	1990	1997	1998
Non-energy	43.9	125.8	100,0	117.6	99.2
Agriculture	45.8	138.1	100.0	128.6	107.8
Beverages	56.9	181.4	100.0	170.7	140.6
Food	46.7	139.3	100.0	116.1	105.0
Grains	46.7	134.3	100.0	112.1	101.3
Fats & Oils	64.4	148.7	100.0	147.4	132.8
Other food	32.2	134.3	100.0	92.4	84.2
Raw materials	36.4	104.6	100.0	113.7	87.3
Timber	31.8	79.0	100.0	125.8	90.9
Other	39.6	122.4	100.0	105.5	84.9
Fertilizers	30.4	128.9	100.0	119.7	122.1

Source: World Bank: Global Commodity Markets, 7(4), Oct 1999, p.80, Appendix

Table 8:
Weighted indices of commodity prices and inflation – Constant 1990 Dollars

Commodity/Group	1970	1980	1990	1997	1998
Non-energy	175.2	174.7	100,0	108.5	95.2
Agriculture	182.6	191.9	100.0	118.7	103.5
Beverages	226.8	252.1	100.0	157.5	134.9
Food	186.2	193.5	100.0	107.1	100.7
Grains	186.3	186.6	100.0	103.4	97.2
Fats & Oils	256.6	206.6	100.0	136.5	127.5
Other food	128.5	186.6	100.0	85.2	80.8
Raw materials	145.2	145.3	100.0	104.9	83.6
Timber	126.7	109.8	100.0	116.1	87.3
Other	157.8	169.5	100.0	97.3	81.5
Fertilizers	121.2	179.1	100.0	110.5	117.2

Source: World Bank: Global Commodity Markets, 7(4), Oct 1999, p.80, Appendix
* The Table is marked 'current 1990 dollars', which seems like a misprint.

'tropical beverages' (coffee, tea, cocoa)[19] or 'other raw materials' (cotton, sisal, other fibres). From the above table, it would seem that the former have done far better in price terms than the latter, but this is in part a result of ending the series in 1998. 'Projections' for 1999 (made near the end of that year), show a fall to 100.8 and even lower to 97.7 for the year 2000.

Such recent figures are not available for relationships between commodity prices received by African producers and those paid to other producers in the world. But FAO figures of unit export values of agricultural exports between 1984 and 1995 shown in table 9 below, illustrate a clear disparity between Africa and other producing areas.

Table 9:
Changes in unit export values of agricultural exports between 1984 and 1995

Area	Unit value 1995
World	146
Asia	142
Latin America	109
Africa	92

Note: Unit value in 1984 =100 (in current terms)
Source: Raikes and Gibbon 2000.

This seems partly due to terms of trade for the specific crops produced in tropical Africa. But it seems likely, as discussed in that article, that one important issue is deterioration in quality standards since the privatisation or closing down of the parastatal corporations which controlled agricultural exports and their grading.

While each product has its own price-trend, relating to specific demand and growing conditions, a common general pattern has been a rapid price decline in the early 1980s, followed by some revival in the late 1980s, further decline around 1990-92 followed by a 'boom' to around 1995 (which still did not reach the price levels of the late 1980s). Since 1997, commodity prices have fallen in the aftermath of the Asian crisis and, for some crops like coffee, now stand lower in real terms than during the 1930s.

One of the historically deepest of trends within world markets has been decline in the prices of basic foodstuffs and raw materials relative to those of manufac-

19) The combined figures for beverages are dominated by coffee, which accounts for some 95 per cent of international trade volume, and still more by value.

tures. Part of this derives from the process known as 'Engel's Law' according to which, as people's income rises, they use a smaller proportion of the total on food, and within that a gradually decreasing proportion on basic foodstuffs, as they expand the components of the diet, and move onto consuming better quality foodstuffs, more extensively or expensively processed, stored and packed. During the past fifty years, prices of both foodstuffs and raw materials have been further hit by an extensive process of substituting natural fibres and oils with petro-chemical based substitutes. (The effect on food prices arises through the loss of 'industrial' markets for vegetable oils).

Since 1980, another series of factors has been important. Structural adjustment programmes and autonomous efforts to reduce indebtedness, throughout the Third World, led to significant increases in export-crop production, spurred on by large devaluations, which offset some of the impact of price decline - in local currency terms. While such programmes were not that successful in Africa, increased production at competitive price from other areas (notably South East Asia) had a negative effect on prices. Also, around the late 1980s - early 1990s, the last of the agricultural producer 'cartel' price-stabilization schemes, like that for coffee, were finally virtually eliminated, leading to further sharp price falls.

Within this, moreover, there is clear evidence that export-prices received by African producers have declined in relation to those received by other producing countries, and as discussed above, much of this seems to arise from problems relating to quality. This itself is connected to the elimination of crop purchasing parastatal and/or co-operative monopolies which, for all their costs and inefficiencies, were often able to generate large bulk supplies of graded produce of reasonably homogeneous quality, and to undertake forward-sales (van der Laan, 1997). At least where such institutions have been replaced by a 'free market' of small traders, much of this capacity has been lost. (See Raikes and Gibbon 2000, Gibbon 1998b). All this happens at a time when Engel-type shifts in demands from industrialised countries have been resulting in expanding price-differentials both between high-valued and 'ordinary' products (meat, seafood, fresh fruit and vegetables vs. grains, oilseeds and sugar) and between elite and standard grades (e.g. estate-packed organic Arabica coffee as against bog-standard Robusta for powder coffee). Thus, at a time when international markets are looking for high quality standards, homogeneity, large-scale deliveries and high degrees of reliability, many African primary commodity markets have been decentralising, reducing scale and finding quality standards hard to impose.[20]

20) For example, for cotton in Tanzania, the crucial distinction between climatic areas, and seed suited to them, and primary product grading, have deteriorated, if not disappeared, as small traders deliver seed from one area to another, and farmers shop-around to find a trader willing not to grade (Gibbon 1998a).

This seems particularly true of high value-added products like fresh fruit and vegetables. These were widely recommended in the mid-1980s, to both African and other indebted countries as a profitable 'niche' export, to counter price decline in 'traditional' exports. This resulted in the setting-up of a number of peasant-based schemes at the time. But as of now, there are probably fewer such schemes then there were then, while those remaining are highly concentrated in a few countries. South Africa and North Africa (Egypt and Morocco) are overwhelmingly the largest exporters respectively of fruits and vegetables, followed by Kenya and Zimbabwe, with a little although growing volume emanating from elsewhere. What is more, a large proportion of this trade is undertaken by large-scale commercial farmers, most of whom are white. One highly significant factor in this trend has been a change in the pattern of northern purchasing and retailing. Ever larger proportions of fresh-produce are marketed through supermarkets in industrialised countries, and these increasingly push 'supply-chain control' ever further back to the producers. In some cases, Third World producers of fresh produce are expected not only to wash and grade them to very high standards, but to pack them in 'shelf-ready' form, and even set bar-codes on the packs. In the case of exports to the UK (one of Africa's larger markets), this is further emphasized by a shift in hygiene regulation towards the American 'tort-system' in which the final seller of produce is legally responsible for showing 'due-diligence' in ensuring that produce has been produced, processed and packed in accordance with the seller's standards. Clearly it is difficult to impose such standards in the absence of fairly sophisticated equipment and institutional structures (Dolan et al. 1999).

Finally, there is the issue of price volatility. One of the specific purposes of both international commodity cartels, like the International Coffee Agreement and of local monopoly purchasing agents, like marketing boards, was to stabilise prices (and, in theory, keep them up). There seems to be have been an increase in volatility since liberalisation, though measurement is a complex process. The response of neo-liberals to this is that firstly markets tend to reduce price-volatility in general, and secondly that the market provides instruments like commodity (and currency) futures and other derivatives with which this risk can be hedged. Here a major disagreement arises since most economists see derivatives markets as dampening price volatility for the underlying commodity - while most non-economists assert precisely the reverse. Here a useful intermediate position is that of Reszat (1999: 65) that: 'there is widespread agreement that speculation has a useful function in adding liquidity to a market in normal times. But there is equal unanimity that, in the fragile environment on the brink of a financial crisis, its effects can become disastrous.' Here Reszat is referring to financial derivatives, but the point can be applied to commodity markets.

Where Africa is concerned (other than South Africa), the issues are rather different. The question is not about experienced price-volatility after hedging, but

about what happens to those who have no opportunity to hedge. Even in the USA, few except the largest farms hedge their crops, though where there are co-operatives they often do. Presumably some of the larger traders in African products hedge price or foreign exchange-risk, but they will certainly not pass on any benefits, so that African producers mainly face the world market 'unhedged', with volatility increased to the extent that they are stuck with the lowest grades of the least preferred products.[21]

5.3
Changes in international regulation

As mentioned above, one of the major external pressures on African (and other) trading countries has been the Uruguay Round process of liberalising world markets and reducing protection. Even in the promotional material from GATT and OECD prior to the Round, it was never envisaged that Africa would be among the gainers from it. Northern protection against unprocessed tropical produce has, for obvious reasons never been high, except for products which are similar to or compete with northern products (tobacco, sugar). So tariff reduction here brings limited benefits - and for industrial products processed from them probably none at all, both because of the standard rising tariff level with each step in processing, and because northern industrial protection is increasingly based on anti-dumping legislation rather than tariffs. Moreover, as members of the ACP, African countries stood to lose their (admittedly quite small) ACP preference as the EU lowered all tariffs in these areas. In reality, the changes arising from the Uruguay Round have been less extensive than foreseen, for the obvious reason that the scenarios of largely free trade painted therein were largely bargaining positions from which compromises could be (and have been) reached.

21) Since price-spread between qualities and types of crop tend to widen in times of glut and low prices, getting stuck at the bottom end automatically increases price-volatility.

6. Changes in Output Markets and Processing

6.1 Introduction

Agricultural marketing in SSA between independence and the start of the liberalisation process in the 1980s was generally monopolised by the public sector through two main systems: the marketing board system (common throughout the continent), and the caisse de stabilisation system typical of export- crop marketing in Francophone West Africa. The marketing board system was characterised by pan-territorial and pan-seasonal pricing, monopoly of domestic and export markets, and control of transport and processing functions. However some variations exist between different countries, e.g. pan-territorial pricing was "to the farm gate" (or more precisely to the nearest village-based co-operative store) in Tanzania, while only "to the depots" in Zimbabwe. Pan-territorial pricing in Tanzania was to the farmgate only between 1974 and 1982. Between 1962 and 1974, there was pan-territorial pricing at the regional co-operative level that is marketing boards paid the same price to all regional co-operative unions.

Private sector involvement was generally very limited, with exceptions in countries like Zimbabwe, where the processing industry was private albeit still monopolised. In the caisse de stabilisation system, private sector actors were contracted to handle crops, but prices and margins at all levels of marketing were administered by the caisse. The system was meant to stabilise prices, so that when international prices were above a set price (calculated against a long-term trend), the difference was used to finance the caisse to cover losses incurred when international prices fell below the set price.

Agricultural marketing reforms under structural adjustment followed three general types of trajectories: 1) rapid withdrawal of the state; 2) progressive disengagement from purchasing, processing and (where applicable) exporting; and 3) relatively little liberalisation. In the case of export crops, a fourth trajectory has also been observed: liberalisation of crop purchasing with exports remaining under state control (see Shepherd and Farolfi 1999). In the case of food crops, the first and second trajectories have been almost universal in SSA, with the exception of the management of strategic grain reserves and limitations on external trade in food crops in selected eastern and southern African countries (i.e. Tanzania, Kenya and Zimbabwe; see also Jayne and Jones 1997; Donovan 1996). In the case of export crops, we find the cocoa sector in Nigeria in the

first category; most export-crop liberalisation experiences in the second category; cotton markets in Francophone West Africa and (until recently) coffee and cocoa in Ivory Coast in the second category; and cocoa in Ghana in the fourth category.

6.2 Food-crop marketing

Prior to structural adjustment reforms, state control of maize and paddy or rice markets was pervasive throughout SSA: this included strict price administration, subsidies for consumers, subsidies for producers in the form of easy credit and input subsidies, single-channel marketing, management of transport, storage and food security stocks, and controls on the import and export of food crops. The level of state intervention in other food markets (such as fruit, vegetables, roots and tubers) was much less dominant. According to Jayne and Jones (ibid.), the main factors that led to the liberalisation of grain markets in eastern and southern Africa were the escalation of costs for marketing boards due to pan-territorial pricing and inefficient management; the increasing importance of parallel markets (for the Tanzania case, see Maliyamkono and Bagachwa 1990); difficult flow of grain from surplus to deficit areas due to trade restrictions; and unreliable input delivery systems.

Food-marketing reforms took place mostly in the 1980s and early 1990s in SSA. The reforms that have been almost universally adopted include: price liberalisation (except in instances where ceiling consumer prices are still applied, e.g. maize meal in Zimbabwe), elimination of subsidies, opening up domestic trade to the private sector (which has quickly come to dominate food-crop markets in most countries), elimination of quantity-based and geographical restrictions on trade, and restructuring of marketing boards (which have generally lost their marketing functions and retained only information and regulatory ones). Continued government intervention takes place in the form of the management of food security stocks and control over export and import of food crops (e.g. Zimbabwe and Tanzania). According to Townsend (1999), reforms in the food-crop sector did not lead to a general increase of real producer prices. Out of the fourteen countries covered in his study, only Nigeria, Uganda, Zimbabwe and Tanzania experienced substantial and sustained increases, while in most other southern African countries producer prices declined due to the high price levels that had been set by governments in the 1980s to achieve food sufficiency. The analysis of aggregate prices, however, hides the wide discrepancies that have emerged within countries. In areas that are more remote from the main consumer markets and/or less served by transport infrastructure, the falls in producer prices that followed the elimination of pan-territorial pricing have been dramatic (for the Tanzania case, see Ponte 1998). In contrast, in more favourable areas, prices have increased substantially.

The main beneficiaries of food-market liberalisation in SSA have been consumers. Real prices for grain and grain meals seem to have declined following the reforms. Higher competition and increased efficiency in marketing and processing have decreased profit margins, a factor that has mitigated the negative effect of the reduction and elimination of consumption subsidies (Jayne and Jones 1997). Finally, the observed success in private-sector involvement in food-crop marketing after liberalisation has been facilitated by the generally low level of entrance barriers, especially in primary grain marketing (Duncan and Jones 1993). However, this does not seem to be the case at the wholesale, interseasonal stocking, or long-distance transport levels, where access to capital, spare parts and electricity or diesel (especially in small towns) is still a constraining factor (see Barrett 1997 for the case of Mozambique).

6.3
Export-crop marketing

While food-crop liberalisation started to be implemented in the 1980s, in the case of export crops serious reforms started to be carried out only in the early 1990s. Currency devaluations normally preceded these reforms, although the timing was different in different regions (the 1980s in most of eastern and southern Africa; 1994 in the CFA community). Currency devaluation, by raising the price of export crops in domestic currency terms, was expected to stimulate incentives and increase production. However, producer price increases materialised only in cases where the effects of exchange-rate changes were passed down to farmers (Uganda, Zimbabwe, Tanzania). In other cases, producer prices actually decreased in real terms (Ivory Coast and Ghana) (Townsend 1999).

By the end of the 1998/99 season, a free-market system was present in most export-crop markets in SSA. Notable exceptions are the cocoa market in Ivory Coast and Ghana,[22] and the cotton sector in some Francophone West African countries. In general, market liberalisation has led to an increased proportion of the f.o.b. price paid to producers across countries and crops, and to faster payments (Townsend 1999; Shepherd and Farolfi 1999). However, there are increasing concerns with deteriorating crop quality (see chapter 6.4), which could offset the effect of increasing shares of the f.o.b. price paid to producers.

Following liberalisation, the private sector actors have become heavily involved in primary buying, either as own-account buyers or as agents of large companies. In the main markets, this has led to competition among buyers, which has improved the timing of payments to farmers and, in some cases, to price competition. Another common aspect of competition, however, has been the timing of procurement: the buying season is starting earlier, which has created

22) The cocoa market was going to be liberalized in 1999/2000 (in Ivory Coast) and 2000/2001 (in Ghana).

some quality problems due to buying, for example, of wet coffee and unripe cotton. Furthermore, as in the case of food crops, areas within countries that do not produce enough to attract private-sector buyers (and where co-operatives have shut down) have been heavily penalised by the end of pan-territorial pricing and guaranteed access to markets.

Evidence from Ivory Coast (coffee/cocoa), Cameroon (coffee), Zimbabwe (fresh fruit and vegetables), Uganda (coffee) and Tanzania (cotton) suggests that foreign companies are controlling or financing an increasing share of large domestic buyers.[23] However, where greater vertical integration is taking place it remains limited to two or three stages of the marketing chain. In some instances, this has also been accompanied by a process of consolidation among exporters (as in the coffee/cocoa sector in Ivory Coast). This is not happening in other countries (e.g. coffee in Tanzania), where an export auction hinders vertical integration and consolidation. Where vertical integration is constrained (as in the case of independent small-scale traders in general), traders have experienced problems in getting access to working capital.

There is also a major difference in the nature of private traders, with a strong involvement by international trading companies in certain crops and a much lesser degree of involvement in others. Where they have been permitted to do so, some important international cotton traders have directly engaged in domestic-level crop-marketing (i.e. Zimbabwe, Ivory Coast and Tanzania). The international presence in coffee-marketing is less marked in East Africa (except for Uganda) than in West Africa, where big international trading companies are heavily represented in the coffee and cocoa markets (i.e. Ivory Coast and Ghana), either directly (Nestlé in Ivory Coast) or through subsidiaries. Even in respect of those crops and countries in which major international companies established a fairly substantial market share in the first years of liberalisation, smaller international companies and domestically owned companies have also kept considerable market shares. Typical of a large majority of domestically owned companies is their low degree of specialisation or background in the specific commodity traded, as opposed to a general involvement in other (sometimes intercontinental) import and export trades (Raikes and Gibbon 2000).[24]

23) In the case of cotton in Tanzania, however, one of the major international companies (Cargill) has recently pulled out from its cotton-buying and ginning/export business in the country, citing declining crop quality and quantity as a cause (Business Times 19 March 1999; cited in Gibbon 1999).

24) In the case of Tanzanian cotton, some of the local trading companies had earlier been involved in cotton-seed oil-milling, but others entered the sector from auto spares, tanning, hotels, bottling and engineering. Similarly, in Uganda one of the main general export traders is Shell Uganda, the largest petroleum-products distribution company (mainly locally owned). In some cases the lack of a crop-specific background is compensated by employing people from public-sector organizations, but more often actors are forced to learn on the job. One consequence seems to be a wide difference in the effectiveness of the performance between local companies and regionally or interna-

6.4
Processing and crop quality issues

The processing of food crops in SSA is usually limited to milling grains into grain meal and hulling paddy into rice, in both cases mostly for domestic consumption. The liberalisation and/or privatisation of food-crop milling and hulling facilities was implemented at the same time (or just after) the liberalisation of primary food-crop marketing, generally in the 1980s. Under the marketing board system (i.e. in Uganda, Tanzania, and Zimbabwe), milling was carried out in large parastatal-owned (privately owned in the case of Zimbabwe) facilities or, for local consumption, in smaller mills privately owned (in the case of Uganda and Zimbabwe) or owned by villages and co-operatives (in the case of Tanzania). The system suffered from some of the same problems that characterised parastatal-run food-crop marketing: high costs, slow turnout, inefficiency, lack of spare parts, corruption, and so on. With the liberalisation of milling operations, there has been a proliferation of small- and medium-scale privately owned facilities. Generally recognised benefits of this evolution have been a better geographical spread of medium-scale milling operations, lower milling costs, better availability of spare parts (due to import relaxation) and generally more efficient operations. It has, however also meant that these new mills have been constrained by lack of capital to buy grain (Pedersen 1997).

As regards export crops, the evolution, significance and consequences of the liberalisation of processing activities have been markedly different from the case of food crops. Also, crop quality has been a key issue in the consideration of the effects of export-crop liberalisation and in assessing the position of specific countries' crops in international markets in terms of quality premia and discount prices. The following discussion will focus on three 'traditional' export crops (coffee, cocoa and cotton), and one group of 'non-traditional' export crops (fresh fruit and vegetables or FFV).

Most of the SSA production of cotton, coffee and cocoa is exported in only rudimentarily processed forms to northern hemisphere countries. The cocoa and coffee processing that is carried out in SSA is mainly confined to basic operations: drying and hulling for Robusta coffee; washing, drying, pulping and curing for Arabica coffee (in both cases exported as 'green coffee'); and simply drying for cocoa (sometimes grinding cocoa beans into cocoa butter). The overwhelming majority of SSA cotton is exported as lint, that is, after the simple mechanical process of separating (ginning) seed and fibre. Rather than adding a substantial amount of value to the commodities in question, these

tionally based companies, particularly with regard to technical and quality-related aspects of the business as opposed to generic 'trading' ones. A related tendency is for extremely high corporate casualty rates (Raikes and Gibbon 2000). The Ugandan coffee market appears to represent this phenomenon at its most extreme. The number of private companies trading coffee was 36 in 1993, 167 in 1996 and 20 in 1997 (EIU Uganda CR, 94/2, 96/4, 97/4).

processes simply qualify them for international transport. An exception is the case of fresh fruit and vegetables (FFV), where some canning for export is carried out (mainly in Kenya and South Africa). Also, an increasing proportion of FFV for European supermarkets is being exported after washing, packaging, bar-coding, and, in some cases, cutting and pre-cooking.

6.4.1 Processing and crop quality issues in the coffee sector

In the case of *coffee,* drying (of Robusta) and washing, drying and pulping (of Arabica) are done at the local level by farmers and/or co-operatives. Before liberalisation, hulling and curing functions were carried out industrially by parastatal companies (in the marketing board system) or by hulling industries under contract for the caisse de stabilisation. In both systems, hulling and curing functions have been in the process of liberalisation and/or privatisation. At the beginning of the liberalisation of primary coffee marketing in Tanzania, co-operative ownership of curing plants (for Arabica coffee) had created problems for private traders, who were denied prompt processing of their coffee (the same is true of fire-cured tobacco in southern Tanzania, see Ponte 1999b). Some of the curing plants were privatised in the second half of the 1990s, although co-operative unions have maintained some level of ownership and have their coffee cured at lower cost (this was the case in 1996 at the privatised Mbinga coffee-curing plant in Tanzania; see Ponte 1999a). In general, management has improved in the privatised plants, but operators complain of lower quality coffee being delivered to their premises due to early buying and poor quality control at the primary marketing level (ibid.). Other plants have been built by the private sector, which has led to considerable excess processing capacity. A similar process took place in Uganda in the hulling industry for Robusta coffee (Shepherd and Farolfi 1999).

An interesting evolution in the hulling industry has taken place in Ivory Coast. Until 1993, farmers in Ivory Coast could not sell green coffee. Most cherry coffee was hulled at the main factories, which had a monopoly on specified areas of operation. As a result of a long-term debate on quality and pricing systems, in 1993 the government allowed farmers to choose if they wanted to sell coffee cherries or green coffee. Nearly all farmers opted to sell green coffee, due to the advantageous price premium. At the same time, under the initiative of the *Groupement à vocation co-operative* (a farmers' association), small hulling machines were imported into the country. This prompted the establishment of local-level small-scale (and labour-intensive) hulling enterprises. By 1994/95, all hulling factories ceased to operate, and now they serve only as collection points for major exporters. This change in the processing system created more employment (especially for women) and meant that more of the added value remained at the local level. On the other hand, it introduced delays in the flow of coffee through the marketing system (turnover is slower than in the case of industrial hulling), which has resulted in a lower coffee quality (small hullers tend to break coffee beans more easily, especially the highly priced large ones).

Most SSA coffee is exported as 'green coffee'. There have been local roasting industries in a number of African countries since the 1950s, but these have mostly roasted lower quality coffee (usually Robusta) for the production of soluble instant coffee for local and regional markets. Recently, there has been an increase in the number and the capacity of instant coffee plants in Ivory Coast. Also, a roaster/instant coffee plant is being built in Uganda by the government in a joint venture with a Spanish consortium. However, so far little instant coffee produced in SSA has been exported. Also, domestic roasters under the liberalised system do not benefit from quota systems or from preferential access to green coffee as they did before; therefore they have to compete with other buyers, which makes procurement more difficult and/or more expensive (the same can be said for cocoa processors and the domestic textile industry in the case of cotton).

6.4.2 Processing and crop quality issues in the cocoa sector

In the case of *cocoa,* Ivory Coast has a number of private industrial cocoa processors, which have recently been expanding their plants and/or constructing other plants. Domestic cocoa processing in Ghana was partly privatised in 1992, when a 60 per cent share of West Africa Cocoa Mills was acquired by a German multinational. By 1994, domestic-level cocoa- processing accounted for 23 per cent of the crop, but exports were still rather low. On the other hand, privatisation plans for the state-owned Cocoa Processing Company (CPC) were put on hold in 1995, after seven foreign companies submitted bids. CPC is currently expanding its bean capacity and confectionery business (Raikes and Gibbon 2000). However, EU regulations imposing higher tariffs on chocolate than on cocoa butter and cocoa beans (and consumer preferences in northern countries) mean a serious bottleneck on the export possibilities of cocoa butter and confectionery from SSA countries. Also, cocoa processors in industrialised countries normally blend beans from a variety of sources, therefore preferring to buy cocoa beans rather than cocoa butter.

6.4.3 Processing and crop quality issues in the cotton sector

The overwhelming majority of African *cotton* is exported as lint, that is, following the simple mechanical process of separating (ginning) seed and fibre. The lint is then sold to domestic textile industries or exported, and the seed is distributed to farmers for future planting, or crushed to make cotton seedcake or oil. In Uganda, cotton ginneries were privatised in the second half of the 1990s with the support of multilateral donors. By the end of 1997, 27 ginneries were being operated by the private sector, four being retained by the co-operative unions. Some ginneries have also been newly built by the private sector (Shepherd and Farolfi 1999). The implications of these changes in terms of crop quality in Uganda are still not known.

In Tanzania, cotton-market liberalisation has succeeded in creating a high level of competition in ginning, which is also due to the availability of cheap donor-

funded credit to build ginneries. In 1997/98, 21 private or joint-venture companies were operating, most of them with their own new ginneries, alongside the ten reformed co-operative unions. To remain in the market, operators unable to command significant levels of working capital followed strategies of maximising the velocity of their capital. This entailed buying seed cotton regardless of quality and entering into ex-ginnery spot sales of lint on the basis of quality discounts. While more concerned about quality, two of the three largest private ginners had made a decision to prioritise attaining the market window premium for early season exports, a choice which was reflected *inter alia* in their choice of ginning technology (saw gins, which give fast throughput but which are unsuitable for higher quality grades) (Gibbon 1999).

Because a number of players were buying seed cotton regardless of quality, all others were forced into this strategy. Problems arising from this development were compounded by the fact that many buyers were operating over geographically extremely large areas and failed subsequently to segregate crop from different locally dedicated cultivars during ginning. This led to problems of mixing different seed types when the time came for the redistribution of seed to different parts of the cotton growing area at the close of the season. Moreover, seed, which was redistributed to growers, was often of poorer quality than in earlier periods, because many private ginners sold all seed of average and medium quality to oil millers, where it commanded a good price. Crop quality was clearly also in decline due to reductions in input use (see chapter 7) and the ending of grading at point of sale. This was reflected in increasing claims by international traders concerning non-discounted sales of lint and related losses of reputation (ibid.).

6.4.4 Processing and crop quality issues in the fresh fruit and vegetables sector

Apart from pineapples in Kenya (Ikiara 1995) and peaches in South Africa (Kaplan and Kaplinsky 1998), not much canning of *fresh fruit and vegetables* for export is taking place in SSA. On the other hand, Dolan et al. (1999) report that supermarket chains in the UK have been out-sourcing an increasing number of their operations in the FFV sector to producing countries. As a result, FFV exporters based in Zimbabwe and Kenya have been upgrading their facilities to handle operations such as washing, packaging, bar-coding and cold-chain management. This, however, means that, in order to match the quality, quantity and timing requirements of importers and supermarket chains, SSA-based exporters have increasingly moved away from buying FFV from smallholders and towards the direct management of own farms and/or into agreements with large-scale commercial farmers (ibid.). In this case, even though an increasing level of value added is being captured in SSA, its distribution is concentrated in the hands of a few (mostly foreign- or racial minority-owned) companies.

There seems to be an increasing interest from foreign and local capital in the realm of export-crop processing in SSA. The easy availability of soft finance from bilateral and multilateral agencies has been a key factor in the expansion of coffee- and cocoa-processing, cotton-ginning and cold-chain management capacity in recent years.[25] These sectors are also favoured by private lending. On the other hand, at least in the cases of cocoa and coffee, this has so far been limited to simple processing procedures that are necessary to qualify the crop for export. Investment in higher levels of processing (coffee roasting, instant coffee production, cocoa butter and confectionery production) has led more to the 'capturing' of local markets than to a marked increase in exports.

In the wake of the liberalisation of export-crop marketing and processing, complaints have emerged in country after country concerning export crop quality. [26] While the single-channel marketing systems suffered from a number of problems, they did to some extent maintain strict quality control, take advantage of economies of scale, and allow forward sales. Van der Laan (1997) argues that the existence of parastatal monopoly marketing systems provided a degree of countervailing market power, since competition between international buyers of Africa's export crops is structurally very limited, with only a handful of importing enterprises exercising a high degree of market power. Also, smaller exporters cannot guarantee sufficient magnitudes of crop in advance to attract additional margins through, for example, tender sales or even forward sales, thus leading to a decline in f.o.b. values (Raikes and Gibbon ibid.). Quality control in the single-channel marketing system was taking place both at the co-operative level and then at the marketing board level for export. In the post-liberalisation regime, the first level of quality control has often been lost, while the second one (at the export level) has either been retained by the public sector (coffee and cotton in Tanzania), or contracted to the private sector (coffee and cocoa in Ivory Coast). Deteriorating crop quality has led in some cases to a quality-based discounting of African export crops in international markets (e.g. cocoa in Nigeria and Cameroon).[27]

25) In the case of FFV, finance is available from public sources for cold-chain development. The main cool stores at Nairobi Airport were built with soft Japanese loans (EIU Kenya CR, 94/1), while those under construction by DAHACO at Kilimanjaro Airport (Tanzania) were financed by the EADB (see Raikes and Gibbon 2000).

26) This has been the case for coffee in Tanzania (EIU Tanzania CR, 98/4), Uganda (EIU Uganda CR, 94/2, 98/1, 98/4) and Ivory Coast (Dow Jones, various 1999) and cocoa in Ghana (EIU Ghana CP 93/94, 95/96, CR 95/2, 96/3) and Ivory Coast (EIU Ivory Coast CR 97/3). In the case of Tanzanian cotton, it has led both to discounting (Gibbon 1999) and to accumulation by ginneries of cotton, which is internationally untradeable (Business Times 19 Feb. 1999).

27) See EIU Nigeria CP 93/94; EIU Cameroon CR 96/3, 97/1.

7. Changes in Input Supply and Agricultural Small-Scale Credit Provision

7.1 Introduction

Since the early 1980s, but especially during the 1990s, the supply of agricultural inputs and credit for inputs has been transformed in most SSA countries. Prior to the shift, the monopoly parastatal corporations and/or co-operatives, which purchased crops, supplied most agricultural inputs for small-scale producers; the vast majority of rural credit was for inputs and was supplied by or through the same agencies.[28] Currently the supply of inputs has fallen significantly, especially to outlying areas, and the availability of credit for inputs has fallen drastically and in many countries disappeared altogether. In other ways too, the previously close relationship between credit and inputs has been broken. Few agricultural inputs are now available on credit, and much new rural credit is no longer provided for inputs.

The pre-liberalisation supply of inputs and credit was very clearly 'agricultural policy' in a number of respects. Ministries of agriculture, parastatals and donors defined the types and levels of inputs, which peasants should use, normally at excessively high levels.[29] They then subsidised input prices and interest rates at levels, which provided an incentive for farmers to adhere to these recommendations. Seasonal agricultural inputs, e.g. improved seed, fertilisers and pesticides, were largely produced by parastatal companies with monopoly status. Monopoly marketing was central to the system, since repayment was 'ensured' primarily through 'deduction-at-source', which only worked at all if the agency making the deduction had a monopoly (monopsony) over crop purchase. All this was justified by reference to the conservatism and 'resistance to change' of peasant farmers and the need to modernise them. From the late 1950s, there is little evidence that peasant farmers resist changes, which directly benefit them. So while there were cases where communities did not adopt the innovations envisaged under such systems,[30] many peasants adopted subsidised inputs with enthusiasm where and when they were relevant and arrived

28) That is, marketing boards and/or co-operatives often distributed credit and collected repayments on behalf of an agricultural credit bank.

29) It was common to see fertilizer recommendations in which even the expected return (itself usually above the actual) was insufficient to cover the cost of the fertilizer.

30) Often as a result of resistance to earlier campaigns for forced introduction.

on time.[31] They also adopted subsidised input credit, though showing less enthusiasm about repayment. As the size, scope and complexity of input-supply programmes increased, control increasingly slipped and loan repayment fell. The problem changed from diffusion of innovations to controlling the increasing cost of subsidies and of the monopoly institutions through which they were channelled. This was especially true during the 'aid boom' of the 1970s, when the expansion of such schemes ran increasingly out of control.

From the early 1980s, this expansion was curbed and then reversed. Throughout that decade, but especially in the 1990s, state involvement in production and distribution of agricultural inputs and credit, together with the monopoly parastatal and co-operative agencies through which they were channelled, has been scaled down or abolished in most SSA countries. Governments have privatised and liberalised input markets to varying degrees of both import, production and internal distribution levels, abolished subsidies and simplified import regulations (Badiane et al. 1997). The elimination of subsidies and widespread currency devaluations on the one hand and privatisation of production of inputs on the other hand, have generally resulted in higher real farm-gate prices for inputs. Institutional attrition has also severely decreased access to input credit, and in remote areas to any inputs at all (Ponte 2000, Gibbon 1999). Though the private sector may have marketed inputs more efficiently at import or wholesale levels, private traders have been unable (or unwilling) to fill the gap left by state co-operatives and marketing boards as regards secondary distribution and (especially) the provision of credit. As a result, input use in most of SSA is generally declining (Townsend 1999, Shepherd and Farolfi 1999).

This chapter will analyse how SSA countries have adjusted to the post-liberalisation situation regarding input supply and rural credit. Section 7.2 starts with a review of four 'post-adjustment models of input markets', namely the 'deduction-at-source model', 'the free-input model', 'the free-market model' and the 'Input Trust Funds'. Section 7.3 then analyses the recent policy change from input-tied credit to 'rural micro-credit and finance'. In section 7.4 the seed sector is used as an example to analyse the effects of privatisation and liberalisation on the production and marketing of agricultural inputs. Finally, section 7.5 contains concluding remarks.

31) Among the major deficiencies of this whole system was that it masked incorrect and/or irrelevant advice with subsidies, and imposed no penalties for late delivery (which for agricultural inputs can be worse than non-delivery since 'recipients' are charged for inputs which they cannot use until the next year).

7.2
Post-adjustment models of input markets

7.2.1 Deduction at source

Deduction at source is the classic model of input supply and credit, which has been in operation in many countries since before independence. Inputs are provided during the growing season to producers of a crop for which the lending agency has a monopoly over sale and are deducted from the proceeds from its sale before payment. In the absence of collateral, therefore, the crop provides security for the loan (sometimes referred to as a 'crop mortgage'), since small producers in most parts of SSA have no land titles to pledge. Formally, this is just a 'co-operativisation' of models operated from time immemorial wherever individual merchants have monopoly control over the crop sales of small peasants. In reality it works rather differently. No merchant would ever advance inputs or anything else to a peasant without a high degree of real monopoly control. Nor would he (or she) press extra inputs on borrowers for the sake of 'modern farming'. The merchant's interest is solely commercial. But co-operatives or parastatals distributing inputs are implementing government policy to increase production and yields and to modernise farming. Indeed in practice, input supply is seen as being more an aspect of agricultural extension than a simple commercial transaction. Thus, for example, loans are commonly given 'in kind' (that is, in inputs) to make sure that recipients do not 'misuse' them by spending the money on school fees, patching the roof or some other 'non-input' use. Often more attention is paid to this form of control than to ensuring that the loan is repaid. Moreover a formal co-operative monopoly is often only worth the cost of transporting the crop to the next co-operative (even less for food crops, which can be sold locally).[32] All this places downward pressure on rates of repayment, especially at times when the government or donors are placing a priority on the rapid expansion of production, thus pressing for a more rapid distribution of inputs and credit. Thus many of the disastrous agricultural expansion schemes which littered SSA in the 1970s had credit schemes dependent on 'deduction-at-source' at their centre, while the costs and losses of credit schemes composed a very significant proportion of the total costs and losses of co-operative and parastatal marketing agencies.

Many such schemes persisted throughout the 1980s and in some cases into the early 1990s, even where structural adjustment programmes were under way. In Tanzania, input credit on the basis of 'deduction at source', which had passed from co-operatives to parastatals in the early 1970s, passed back in the early 1980s and continued for some years and some crops after the formal adoption of adjustment in 1986. But it lasted no longer than the liberalisation of output

32) The effective operation of such a system requires agreement and coordination between all the buyers of a given crop, or at least a very high proportion of them. Stockbridge, Smith and Lohano (1998) cite a successful example of cotton-buying in Sindh, Pakistan. But clearly this is also likely to involve other forms of buyer coordination, for example, to hold down prices.

markets except where co-operatives were willing and able to build up their own debts, since this removed the source from which the deduction was to be made.[33]

During the 1990s, input-supply models of this sort survived mainly where parastatal monopolies also survived (cotton in Francophone West Africa). But deduction-at-source is also a characteristic procedure in contract-farming and was adopted by private cotton firms in Ghana in 1996/97 to address problems which had emerged with the 'free-inputs' model of low producer prices and low yields due to input diversion (Poulton 1999, Poulton 1998). For cotton-marketing in Zimbabwe, deduction at source has remained 'viable' because the limited number of companies involved used group-loan mechanisms and were able to seize the movable assets of defaulters (Goodland and Gordon 1999a).[34] Deduction at source is also still used in the cotton sector in Zambia, where there is a long tradition of outgrower schemes, though diversion of sales by outgrowers to alternative buyers is reported to be on the increase (Stringfellow 1996). This may relate to the fact that the crop is purchased in steadily devaluing Kwacha, while input deductions are made on a dollar basis (Raikes, 1999 visit). Finally, in Tanzania, some local governments have tried to retain the 'deduction at source' model via regulatory intervention, forcing buyers to provide inputs to farmers on credit. Successful enforcement, however, has been rare.[35]

7.2.2 'Free inputs'

Models known as 'free inputs' in fact involve a cross-subsidy from the product price which covers the whole cost of inputs. That is, all farmers delivering the crop in question pay a set levy, whether or not they use inputs; the level is set so as to collect the total cost of input supply. It could thus be seen as a cruder and simpler version of deduction at source, being regarded by its advocates as having the advantage that if the levy is collected from every buyer, it is more

33) The cost of inputs for which farmers have defaulted on their loans is probably the major single cause of bankruptcy among Tanzanian and probably many other African crop-purchasing cooperatives.

34) This is, of course, an example of using collateral to remedy the deficiencies of deduction at source.

35) Defaulting on local input loans has been addressed in two ways in Tanzania. One has been to assign local monopolies of input provision and crop purchase to specific buyers. This eliminates competition and lowers prices to farmers, but does not avoid territorial 'invasion' by unauthorised buyers (a major problem in several areas). Another has been to have all buyers subtract the cost of inputs from payments to farmers, regardless of who provided them—followed, in theory, by a reconciliation procedure in which each buyer is reimbursed for inputs provided. Not surprisingly, this complex system does not work in practice. Buyers supply as few inputs as possible and pocket the deductions they take from farmers. Even if they respected the system, they would find it difficult to force it on farmers, since the latter can sell to those buyers who are less strict in deducting input expenditures. Here again, the system does not work if there is no trust or information-sharing among buyers (Ponte, 1999a).

difficult to evade by side-marketing. But it also involves yet more incentives to cheat and 'side-market'. Local co-operatives may be state-controlled, but they are also controlled by members of or factions within the local elite. Under any model they are likely to allocate a large proportion of available inputs to themselves and their cronies. When they all pay for them through a levy on produce, they have little incentive to leave any inputs at all for others. Thus what may seem to its designers to be an egalitarian scheme can easily end up forcing the poor, who receive no inputs, to pay for the bulk of those used by the rich and influential. Moreover, given the cost of running such programmes, this will involve significant deductions from the prices received by farmers and encourage them to sell their crops elsewhere.[36]

The 'free-inputs' model was in operation under donor programmes for some export crops in Tanzania in the 1970s and early 1980s, though deduction at source was more common. Before liberalisation, it was sometimes used in export-crop marketing in other SSA countries as well. Since then, it has almost disappeared. One exception was cotton-marketing in Ghana between 1985 and 1995, where it worked for a while because relatively few companies were involved in the market (Poulton 1999). But while this allowed them to set common prices for inputs, services, and output to their own advantage against farmers, failure to share information and forego poaching from each other made the prevention of input-diversion impossible. As noted above, it was replaced by deduction at source in 1996.

Another exception is a recent (1998/99) experiment with 'free inputs' in the Ugandan cotton sector. Here 34 private cotton-buyers formed an association, which secured a government-guaranteed loan for the purchase and distribution of cotton inputs through the cotton parastatal, to be repaid by a levy on cotton ginning. The goal of the buyers was to ensure the provision of inputs on credit to farmers to encourage them to keep growing cotton, but without undertaking the risks or transactions costs involved in input-supply themselves. This they achieved despite a lower harvest than forecast since the government 'had to' make up the shortfall (Goodland and Gordon 1999b). In sum, when information-sharing among buyers and effective mechanisms to 'punish' input-diversion are lacking, the 'free-inputs' model does not seem to be viable. Even where sufficient buyer co-ordination exists for 'viability', this is probably almost always bought dearly (by the farmer) since it tends to go with effective buyer co-ordination to depress prices. Finally, it seems almost invariably to benefit the richer and more influential farmers who control local-level input distribution. Its demise following liberalisation thus seems no loss.

36) Even if the 'free-inputs' system operates over a whole 'crop zone', preventing simple forms of diversion (to the neighbouring cooperative), African small-scale farmers (and larger ones or traders transporting their produce) are perfectly capable of seeking and finding markets in neighbouring countries or several hundred kilometres away).

7.2.3 Free-market

The 'free-market model' can scarcely be considered a formal 'model' of input distribution since it consists in getting rid of any specific models and notably the subsidies they involve and letting the market decide—though it could on occasion involve short-term encouragement and incentives to private traders to enter the area of input-supply. Fairly obviously, especially given the widespread abolition of transport equalisation subsidies, this had very different implications for areas, which are close to major towns and linked to major transport links and those, which are not. Private traders have not generally shown much interest in supplying inputs in small quantities to areas far from towns and linked by poor roads. But the most dramatic change relates to credit, since there are almost no cases of private traders (even if they are crop-buyers) providing inputs on credit—hardly surprisingly, since without collateral such loans would be extremely insecure.

Input distribution through the 'free market' represents the most common situation in SSA following liberalisation. Shepherd and Farolfi (1999) report that this is the case for a majority of the ten export crop markets they surveyed.[37] How (or if) this works depends on circumstances, especially whether input-suppliers are also crop-buyers. Where they are not, the input-supplier has no security at all for loans made, though inputs have to be supplied at a time of year when most peasants are short of cash. Under these circumstances, small farmers are likely to use only the most essential inputs. The situation should, in principle, be rather different where crop-buyers also have the means to supply inputs. Here the buyer has an interest in input use, since it increases the availability of produce for purchase. In many parts of the world merchants easily impose their monopsony on peasants and reduce them to debt bondage. But, at least so far, this seems not to be the case in recently liberalised SSA, and private traders face the same problems of non-repayment through side-marketing as do parastatals or co-operatives.

Nor do the other reasons for supplying inputs seem to find favour with buyers. Most find it costly on a small scale and would themselves have to seek extra credit, at extra cost. Therefore, they tend to minimise input provision and buy on a cash basis only. In extreme cases, crop-buyers may even decide to disengage from a particular product market rather than provide inputs (for example, after government attempts to enforce input-supply). This led to significant decreases in input use, especially for small farmers living in remote areas (Ponte 2000).

37) Shepherd and Farolfi (1999) report that a 'free-market' system has emerged in the cases of cocoa in Cameroon and Nigeria, and of coffee and cotton in Tanzania and Uganda (although in 1998/99 a credit scheme was experimented with in Uganda; see following sub-section). Input provision in the case of cotton in Mali is still provided on credit by the cotton parastatal, which has maintained a market monopoly of the crop. In the case of cotton in Zambia, where there is a competitive cotton market, a system similar to that operating in Mali is run by the major cotton companies through outgrower schemes. The input situation of coffee in Ethiopia is not documented, although the case study was part of Shepherd and Farolfi's review.

7.2.4 The 'Input Trust Fund'

An alternative input distribution model, especially in relation to export crop cultivation, involves the establishment of local-level input trust funds. A first type, the 'revolving' input trust fund, collects a levy from farmers in proportion to their export crop sales until enough capital is gathered for the first purchase of inputs (this may take years). Once the fund is established, farmers can purchase inputs from the fund on a cash or credit basis. In following years, at least in theory, the fund replenishes itself. The capital raised through farmers' contributions can be supplemented with contributions from local governments, co-operative unions, primary co-operative societies, and private traders. Traders may have an interest in contributing to the input trust fund because it relieves them from input provision tasks. In this way, they can concentrate on crop purchases without risking a shrinking market due to lower input use. Also, special provisions may be arranged with traders or co-operative societies for the delivery of inputs on behalf of the input trust fund (to minimise transport costs).

However, several problems can hinder the creation of a 'revolving' input trust fund: (i) farmers are reluctant to accept repeated deductions for the establishment of a fund because they fear that the money they pay will be misappropriated; (ii) farmers may not be interested in the long-term advantages of the fund if the short-term consequence is a lower cash income; (iii) traders may have a short-term advantage in not paying contributions to the fund, especially if the prospects of the market are bleak or if they do not regularly operate in the area; (iv) the fund may solve the problem of input availability and distribution; but if inputs are sold for cash, it does not solve the farmers' need for credit at the beginning of the agricultural season; and (v) if inputs are distributed on credit, and there are no accountability mechanisms built in to the model, the long-term sustainability of the fund is doubtful.

The problem of credit recovery could be solved through the further separation of input distribution functions from credit provision functions, with the former managed by an input trust fund and the latter by locally-based independent savings and credit societies functioning on group-lending. However, micro-finance in SSA has rarely provided credit for the purpose of purchasing agricultural inputs. This is because credit for input purchase is highly seasonal; therefore, it is difficult to comply with some of the basic rules of successful micro-finance. Farmers using credit for inputs are unlikely to make regular deposits into the scheme, especially in the period following the disbursement of the loan. All farmers need the capital for input purchase at the same time; therefore, the revolving fund mechanism cannot function. Furthermore, the principle of joint liability for group-lending is weakened by the fact that all farmers repay at the same time, thus increasing the possibility of mass default (Dorward et al. 1998).

A more promising type of input trust fund uses a 'passbook model'. As is the case for the 'revolving' fund, the 'passbook model' fund collects a levy in proportion to the quantity of crop sold. However, the farmer receives a stamp on a passbook, and part of the value of the levy entitles him/her to receive a certain amount of inputs from the fund in the following season. The remaining part of the levy is used for administrative costs, interests and transportation of inputs. Most of the problems limiting the smooth working of the 'revolving' fund are addressed by the 'passbook' model. First, farmers do not have to wait for years to see the benefits of the fund because they are just charged a levy in advance of the following season. Second, there is no problem of credit recovery because farmers pay in advance for the inputs they are entitled to; they also pay for them at the time of crop sales, when cash is readily available. Even though farmers' entitlement may not cover their entire need for inputs, their cash outlay at the beginning of the following season reduces dramatically.

The empirical evidence on the creation of Region- and District-level input trust funds in Tanzania shows mixed results.[38] By the end of 1996, district authorities had not yet raised the idea of an input trust fund either in Songea or in Morogoro. In Mbinga, the District Agricultural Office proposed the establishment of a 'revolving' fund in early 1996. Private traders were asked to contribute in proportion to the quantity of coffee they purchased in 1995/96, but the fund failed to make any progress by the end of the year. Poulton (1998) has reported that the Mtwara and Lindi Regional 'revolving' input trust funds have suffered from problems of accountability. In those districts where primary co-operative societies have distributed sulphur (for cashewnut cultivation) on credit, loan recovery was problematic. Also, a large proportion of the money collected by District Councils for the purpose of input purchase was not forwarded to the Regional input trust fund. On the other hand, a 'passbook model' input trust fund has been successfully operating since 1995/96 in Tunduru District (in Ruvuma Region).[39] Also, according to Turuka (personal communication), a relatively well-functioning fund supporting coffee farmers was recently created in Kigoma Region.[40]

In sum, input trust funds can relieve crop traders from a function (input provision, especially on credit) that they do not normally want to perform because they can rarely make a profit from it. In other cases, they may perform it to gain market share, if they can enforce their contracts at all. Due to economies of

38) A national-level 'revolving' input trust fund was also established in Tanzania in the mid-1990s to provide a credit facility for input importers. Unfortunately, the government's budget allocation for this fund has decreased in recent years, which may create supply problems at the wholesale level.

39) Source: Ruvuma Region Inputs Coordinator; see also Poulton [1998b: 143].

40) The recent experiment of input provision for the cotton sector in Uganda described earlier was also based on the division of functions between crop purchase and input provision on credit. However, in this case, the system suffered from the basic problems of a 'free inputs' system.

scale, trust funds can provide inputs to farmers at a lower price and with a wider geographical coverage.[41] Releasing crop traders from the high transaction costs they face in input markets is also likely to increase competition in output markets. Decreasing the requirements for traders' working capital lowers barriers to entry, especially for small-scale traders who usually face severe constraints in obtaining loans from financial institutions.

7.3
Rural micro-credit and finance

Rural credit has undergone even greater changes with liberalisation than has input-supply, one of the most important being the partial de-linking of the two. Most input and credit agencies, i.e. marketing co-operatives, have either been closed down since liberalisation or have had their activities reduced to lending to borrowers who can offer collateral in the form of registered title to land. This naturally limits credit to a very small and wealthy minority of the population, whose political prominence may offset the supposed discipline of collateral, since bank officials might hesitate to foreclose on their mortgages. However, this revamped credit agency sector has little to offer small farmers or micro-entrepreneurs. Donors, governments and NGOs make periodic efforts to resuscitate aspects of the old model at project level, hiding subsidies as 'demonstration inputs' or in various other ways. However, these only tend to last for short periods, either because they run up against anti-subsidy aid conditionality, or because repayment rates tend to fall and costs to rise, or both.

Rural Micro-Credit is the general rubric under which new thinking about credit policies is presented. A recent IDA document proposing a 'rural and micro-financial services project' in Tanzania illustrates some of the changes (IDA 1999). Its stated purpose is to 'contribute to the development of a diversified and sustainable rural and micro-finance model'. This is to be achieved by developing a common policy framework, providing an 'enabling environment' to encourage local private entrepreneurs to set up broad-based and sustainable (i.e. profitable) rural micro-financial institutions, and donors to provide them with finance for this purpose. This, it is hoped, will overcome the problems associated with subsidised schemes with lender-specified end-use, namely high costs, low repayment levels and monopoly marketing. It also aims to overcome a major problem with what currently remains of rural credit—a large number of diverse and uncoordinated (mostly NGO) local projects which include a credit component—namely that they tend to undermine each others' impacts (as, for example, when a new entrant offers easier terms than those already operating, thus 'poaching' their clients, and probably their repayments too).

41) Evidence in this direction is provided by Poulton [1999b] in the case of sulphur provision in Southern Tanzania.

This follows the findings of Adams and others (for example Adams and Fitchett 1992) that while almost all state-funded credit programmes for small farmers involved high costs, low repayment rates and heavy losses, this was a result of their structure and operation, not the unreliability of small-borrowers (Zeller and Sharma 1998).[42] On the contrary, examples like the Grameen Bank in Bangladesh, where loans are aimed primarily at poor women, show unusually high rates of repayment. Country case studies for this report also show that much micro-borrowing is for consumption, and that repayment rates (contrary to previous stereotypes) are often as high or higher than for 'production' loans. It argues that in many cases consumption loans (through releasing bottlenecks) can have equally or more positive effects on production and income than 'in kind' production loans—apart from the fact that a large proportion of tied loans are converted to cash for consumption purposes anyway.

Having said that, the authors also stress that programmes which combine credit and other services, like training in literacy or small-enterprise management, tend to have more positive effects than plain credit, though at significant and largely non-recoverable costs, requiring one or another form of public funding. In this version, at any rate, the aim is not that the overall programme should be financially sustainable, but rather that its strictly financial (credit, savings) aspects should be. This involves strict accounting separation between lending activities—where high repayment rates and interest rates at or above those for commercial lending are required—and 'ancillary' activities (training programmes, perhaps building of physical facilities), which can, if necessary, be grant-funded.

New policies differ from the old ones in the following specific ways:

Demand-drivenness. Loans are generally intended or claimed to be 'demand-driven', implying that they are to be given for purposes chosen by borrowers rather than lenders. This is often a statement of intent rather than fact. Project guidelines continue to stress production and to set out lists of 'approved' activities for which they will lend, while project personnel use 'credit-training' to encourage clients to demand what the agency would like them to demand. This does seem to be a central ambiguity in 'new thinking' about rural credit. On the one hand, donors, states and NGOs express concern that credit and financial services should meet the 'felt needs' of borrowers. On the other hand, most are also concerned that their interventions should be 'developmental', which they almost invariably link to the direct expansion of production and income, usually in ways devised by themselves or the experts they employ. In the process, the expressed belief in small-farmer rationality can get lost.

42) One can accept this general empirical conclusion while finding the absolute anathema placed upon all state economic activities exaggerated and the picture of the invariably rational, honest small-farmer over-romantic.

The focus on *sustainability* has led to markedly higher interest rates. Where rates of between 5-10 per cent were common before liberalisation (often translating into minus 10-20 per cent in real terms), nowadays it is unusual to find rates under 30-80 per cent, at least for projects claiming sustainability. Even at that, a 30 per cent interest rate could well be unsustainable given an inflation rate of 20 per cent, since administrative costs for small loans are likely to be over 10 per cent.[43] Another reason for high interest rates is to discourage the rich and influential, who were apt to capture subsidized loans aimed at the poor for themselves.

Group loan schemes are based on two overlapping but different sets of premises. One is that groups exercise social pressures on their members, because the failure of one of them to repay a loan excludes other group members from future lending. But this is unlikely to deter an unscrupulous member of an ad hoc group formed solely for the purpose of getting credit,[44] and in practice it seldom does. So, in order to work, these pragmatic forces need to be supplemented by group solidarity and the sort of pressure, which makes potential defaulters embarrassed or ashamed to do so. For this purpose groups which already exist for other purposes, or which are composed of members of the same church or club, are generally more effective.

Savings and loan schemes. Prior to liberalisation, savings schemes were introduced under marketing co-operatives in a number of countries, notably Kenya. The primary motivation was often to raise funds for possible lending. The savings were often forced, in that crop-sale pay-outs were paid into savings accounts, which could not be drawn down below a minimum level. In short, this had little to do with demand for savings.[45] But almost all surveys show that small farmers, especially rural women, are enthusiastic about opportunities for savings, even to the extent of accepting major value losses with interest rates well below the rate of inflation. Savings and loan societies thus seem an ideal way to develop rural financial markets so long as these savings can be made secure. This means being very careful about to whom they are lent, and/or charging very high interest rates to cover the risk.[46]

43) It is common in this context to refer to 'transaction costs', that is, the costs of ensuring repayment over and above what they would be in some notional 'perfect economy'—an inherently unmeasurable concept.

44) As in the Zambian example cited above.

45) Nor did it add to the supply of loanable funds, since those involved were (rightly) concerned about the likelihood of losses from non-repayment if members' savings were lent under existing programmes.

46) This already happens widely among informal womens' groups and savings clubs, which in some localities provide a significant proportion of rural cash-loan requirements. But with interest rates of 10-20 per cent per month, they are generally too expensive for agricultural production.

This is by no means to claim that all the problems of rural credit can be solved by combining savings and credit and focusing on groups. It does seem to help, but the long roll-call of credit schemes which are successes for the first few years (as long as loans can be rolled over) and then suffer a rapid decline in repayments and viability thereafter shows no signs of disappearing.[47] The losses on small group schemes are far smaller than those of the previous state-funded schemes, but to the extent that they are funded by local savings, the losses are felt by poor local savers, who can far less afford them than can states or donors. Nonetheless, this seems a preferable way forward compared with a return to state subsidised input-credit, which in any case seems unlikely to be an option.

7.4
Changes in seed-supply systems

7.4.1 The pre-adjustment seed sector

Before structural adjustment, national seed systems were largely in the hands of public agricultural research institutions and extension service and parastatal seed companies. Plant breeding has traditionally been in the hands of state agricultural research institutes implementing commodity crop breeding programs for the country's most important food and industrial crops. Such programs have received considerable criticism for paying insufficient attention to the farming conditions of smallholder farmers (Friis-Hansen 1995). Before structural adjustment, in most SSA countries seed production was also controlled by public sector monopolies, charged with the task of producing seed of varieties released by public crop breeding programs. Seed distribution in most SSA countries was managed by parastatal seed companies, their agents (e.g. co-operative unions) often on the basis of subsidised credit in terms of fixed packages containing seed, fertiliser and pesticides.

Parastatal seed companies operating as monopolies were built up with the assistance of donors, in particular the FAO, World Bank and USAID, during the 1960s and 1970s. Many of these companies were rehabilitated and further supported in the 1980s. In spite of these efforts, most SSA national seed companies were mismanaged, operated with very high overhead costs resulting in considerable economic losses, and were inefficient in fulfilling their goal of satisfying farmers' requirements for improved seed varieties. In 1994 only 2 per cent of the maize crop in Tanzania was planted with purchased certified modern varieties of seed (World Bank 1994c). However, a larger proportion of land is likely to be cultivated with retained seed of improved maize varieties (Friis-Hansen 1999). Nevertheless most land in Tanzania, as in most other SSA coun-

47) Nor does the list of cases in which funds are misappropriated by project officials before even reaching the intended borrowers. In one case recently encountered, the consultant employed to set up a micro-credit project for income-generating activities took large 'loans' from local businessmen with the promise of directing credit to them, and then disappeared with the money.

tries, is planted with seeds of landraces, which are developed, maintained and exchanged by farmers themselves, using local knowledge about plant genetic resources.

7.4.2 Reforms of the seed sector

The inefficiency and high level of subsidy requirements of parastatal seed companies made this sub-sector a prime target for change as part of the policy reform. The structural adjustment programmes argued for the complete withdrawal of the state from active participation in the multiplication and distribution of agricultural seed and a limitation of its activities to regulatory work, including quality control and advice and support for the private sector. A number of countries have successfully privatised their parastatal seed companies: Monsanto now controls the National Seed Company of Malawi, the Ghana Seed Company was declared bankrupt and its assets taken over by a local business, Nigerian seed activities have been privatised, and the Swedish Seed Company Svalof has been awarded management contracts for national seed companies in Mozambique and Zambia (Seed Tech News 1988, Cromwell 1996, Friis-Hansen 1995, African Economic Digest 1989, African Economic Digest 1990). Other countries, such as Tanzania, have retained their national seed company but scaled down their subsidies. Seed production and distribution was liberalised throughout SSA in the 1990s, giving rise to a number of indigenous private seed companies as well as the entry of transnational seed companies: the South African-owned Pioneer Seed Company operates in Zimbabwe and Zambia, and the Kenyan Seed Company and Cargil/Monsanto operate in Tanzania (Friis-Hansen 1995, Friis-Hansen 1999).

While structural adjustment has succeeded in privatising and liberalising seed production and distribution, it has not promoted adequate reforms of the national seed regulatory framework. Such reforms are crucial if poor farmers are to benefit from the liberalisation of the seed industry.

Plant breeding and variety release regulations are no longer internal questions for public sector research, and reform is required to enable equitable variety approval procedures for both the public and private sector. Establishing genuine national plant breeding programs requires considerable resources and the inadequate reform and implementing capacity of seed regulations has allowed the private seed companies to get away with importing varieties from other countries (e.g. South Africa) and marketing them after only a short period of local testing. There is moreover growing recognition of the diversity of farmers' needs calling into question the validity of standard release procedures which rely too heavily on narrow (potential) yield criteria favouring better-off farmers and often eliminating varieties that would be useful to poorer farmers (Tripp et al. 1997).

However, the pace of reform of seed regulations in SSA has been slow and often inadequate when implemented. A recent review concludes that current public seed regulations are not effectively organised, use inappropriate standards, do not offer opportunities for participation by farmers and seed-producers and are not sufficiently transparent (Tripp et al. 1997).

7.4.3 Impact of structural adjustment on the seed sector

Liberalisation of the seed sector has no doubt improved the efficiency of seed production at the wholesale level, but provided few improvements at the farmer level (Ashimogo and Runkulatile 1999). The reasons for this market failure readily emerge from the analysis of seed industries in developing countries: firstly, the inventory, storage and wastage costs of seed suppliers become insurmountable if they are to satisfy the diversity of smallholder demand for improved seed, which includes having to supply multiple varieties of seed in small amounts at the right time and to carry stocks sufficient to meet uncertain and fluctuating demand. Secondly, additional costs occur in satisfying the seed requirements of small-scale farmers in environmentally marginal areas, who demand seed varieties which are well adapted to local specific micro-niches and whose yields hold up under adverse conditions of moisture stress and attacks from pests and disease. Finally, income from the sale of non-hybrid seed varieties is limited because of the possibility for farmers to multiply, exchange and use purchased seed for several years without a significant loss of quality (Cromwell, Friis-Hansen and Turner 1992, Friis-Hansen 1992, Wiggins and Cromwell 1995, Cromwell 1996).

7.4.4 Policy alternative to satisfy farmers' seed requirements: initiation of village-based on-farm seed production in Tanzania

Faced by the failure of both the parastatal and private seed sectors to satisfy farmers' requirements for seed beyond the farm gate, some African countries (Tanzania, Zimbabwe, Malawi, Namibia, Zambia and Ethiopia) and donors (Danida, GTZ, FAO/IPGRI/IFAD) have begun experimenting with models of decentralised seed production.

The process of liberalising the Tanzanian seed industry, which started in the mid-1980s, has created a number of problems. First, the removal of subsidies and price controls for seed has meant that the real prices of certified seed have more than tripled compared to prices before liberalisation. Secondly, it is not economically viable for private seed companies to provide seed at the appropriate time to farmers living in areas far away from where the seed is produced. Thirdly, the increasing number of seed companies has reduced the ability of the Tanzanian official seed certification agency, TOSCA, to control and certify the seed quality (Sabuni 1999).

The post-adjustment formal seed sector supplies only about 4 per cent of the estimated national seed demand of 100,000 tons of certified seed. Both the pri-

vate and parastatal seed companies are concentrating their activities on a few highly profitable seed crops and neglecting less profitable seed types, which are crucial for food security for small-scale farmers, including non-hybrid varieties of maize, sorghum, millets, pulses, oilseeds and potatoes (Ministry of Agriculture and Co-operatives, Tanzania, 1998).

Since 1998, the seed unit of the Ministry of Agriculture (with support from Danida) has tried to address this situation by initiating 100 village-based on-farm seed-production units. These units are to produce high quality seed to satisfy the local seed demand of each individual unit. The choice of crop varieties for seed production will be based on an assessment of the specific seed requirements of each specific area and is expected to consist primarily of modern seed varieties, but also to include the seeds of local landraces to the extent that they are preferred by farmers (Ministry of Agriculture and Co-operatives, Tanzania 1999).

As plant breeding in Tanzania has long been under-funded and ineffective, neither breeder seed nor foundation seed are currently available in Tanzania in sufficient quality or quantity. Two of the existing four malfunctioning foundation seed farms will be renovated with the aim of producing foundation-quality seed to serve the village-based seed-production units. On-farm seed production will be undertaken by individual farmers in the villages, who are chosen by the seed unit in consultation with the community. The chosen farmers will receive training in seed-production techniques and will receive technical assistance in building up their own seed-production units. The local extension officer will be invited to join the training. It is planned that TOSCA will be reformed to enable it to provide technical services such as seed quality control to the decentralised on-farm seed-production units (personal communication from staff in Ministry of Agriculture and Co-operatives, 1999). It is too early to assess whether the fact that this programme is 'village-based' will be enough to ensure 'participation' in view that many other MoA-channelled extension and training programmes have failed in the past.

7.5
Concluding remarks

Both the 'deduction at source' and the free input' models of providing input on credit have lost much of their relevance and importance since adjustment, as state monopoly marketing was replaced with a 'free market' model. This has significantly limited the provision of input on credit to small-scale farmers and favoured areas which are easy accessible and have a high density of demand for inputs over areas where input requirements are low and spatially scattered. Liberalisation and privatisation of the seed sector has ensured a more efficient production and stable supply of improved seeds, in particular benefiting better-off farmers in easily accessible high potential areas, while it has provided few

improvements for poor farmer in marginal areas or for crops which are nor viewed as commercial viable by the seed industry.

However, it is difficult to distinguish between supply (failure) factors and reductions in demand resulting from very much higher input prices as a result of devaluation and subsidy elimination. This led several governments to make every effort to retain aspects of the old system of parastatal production of inputs and 'deduction-at-source' or 'free-input' models of credit. Others have tried to develop new and alternative institutional arrangements.

Input trust funds, in particular the 'passbook model', is emerging as one alternative model of overcoming farmers' financial constraints for purchasing agricultural inputs. However, clear accountability, including representatives of key stakeholders (traders and farmers) in the input trust fund board, is crucial for the success of such alternatives. Decentralisation of the production of inputs, e.g. on-farm seed production, is a complementary alternative institutional arrangement, aimed at insuring a stable, cheap, demand-driven production of improved agricultural inputs relevant for poor farmers. Again, socio-economic processes, in particular the character of dialogue between farmers' and MoA staff, rather than technical issues, are determining whether such alternative institutional arrangements will succeed in improving farmers access to agricultural inputs.

8.
Reforms of Research, Extension and Technology Development

8.1
Introduction

In the past, research and extension (R&E) in SSA has been carried out by centralised and increasingly donor-dependent institutions, which have been widely acknowledged to be under-performing. The under-performance of R&E in SSA has been subject to many studies, and the major reasons can be grouped under three headings: under-funding, poor management and lack of relevance.

Most commentators agree that R&E is seriously under-funded. Since the early 1980s the funding of R&E by SSA governments has declined, while staff numbers have continued to increase. In particular administrative and other support staff have increased, and on average national agricultural research institutes today have ten support staff per researcher (World Bank 1999a). While external donors have invested considerable funds in R&E over the past two decades, most have been spent on training, technical assistance, capital investments and running narrowly targeted projects. Consequently the operational funds available to researchers have become grossly inadequate.

Some argue that the limited effectiveness of R&E in SSA may be due as much to the poor management of existing resources as to inadequate levels of finance in the aggregate (Beynon 1998). This includes issues such as staff composition, incentives, procurement procedures and techniques of financial control. Examples of poor management include salaries far below what can support a family so that even the most engaged researcher cannot avoid becoming involved in other income-generating activities; a lack of operational funds significantly limiting research activities; and a failure to allocate resources in accord with rationally established development priorities (Oehnke, Anandajayasekeram and Masters 1997).

Low productivity of agriculture in SSA can (in part) be traced to the lack of an adequate interface between research and extension on the one hand and farmers on the other. As a consequence of this inadequacy, farmer' needs do not sufficiently drive the orientation of R&E efforts, causing a lack of relevance. Moreover, even when relevant, the know-how and technologies, which are produced by R&E systems, are not widely taken up by farmers, suggesting a lack of effectiveness in the transfer of agricultural technologies (Oehnke, Anandajayasekeram and Masters 1997).

The perceived failure of R&E in SSA to generate and apply successful technologies in spite of significant investments by external donors, especially when compared with the green revolution in Asia and Latin America, has been a major reason for reform in the 1990s.[48] Another pressing argument for reform has been the fiscal crisis facing most SSA states in the 1990s, leaving little or no prospect of increasing public funding for R&E.

8.2
Reforms of agricultural research and extension

Most national R&E systems underwent major reforms during the 1990s as part of structural adjustment. The reforms were undertaken within two broad areas: (i) measures to reduce the scope of state involvement by transferring financial obligations and actual delivery of services to the private sector or farming communities, and (ii) measures seeking to improve the cost-effectiveness of the R&E activities which remain in the public sector. Some of the most important R&E policy changes are discussed below, using examples from the case-study countries (Beynon 1998).

R&E reforms redefine the role of the state with regard to finance and the delivery of agricultural services to farmers by distinguishing between public and private goods (see the discussion of these concepts in Chapter 3.4). However, it is often not possible in practice to distinguish between public or private goods, as many services, in particular R&E, have both a private and public component. The actual decision on whether a given R&E service is classified as public or private is therefore often influenced by whether a private sector exists or can be stimulated and whether the users are able and willing to pay the full cost of the services in question. The trend is for the state to continue to conduct basic research into major food crops, while research into industrial or export crops has been privatised. However, even the basic R&E services, which remain the responsibility of the state are commercialised as much as possible through the introduction of levies and other user fees (Beynon 1998).

The level of public research into export crops by Department of Research and Specialist Services (DR&SS) in Zimbabwe was gradually reduced during the

48) The prevailing pessimistic view that investment in technology development and transfer (TDT) in SSA has not had any significant impact has been challenged by a number of impact-assessments carried out since 1992. Methodologies for such TDT impact-assessment studies improved significantly during the 1990s, rate of return in the most advanced studies being calculated as social surplus measures, which include impacts on household welfare, such as improved nutritional status and enhanced household food security from greater food production and productivity. The greatest effect of increased agricultural productivity, particularly among the very poorest, is an increased ability to reallocate labour and/or cash income away from food production or towards the purchase of non-agricultural requirements. These studies suggest a rate of return in investments in TDT typically exceeding 15 per cent (Oehnke, Anandajayasekeram and Masters 1997).

1990s, and such research is now almost fully privatised. This has been possible because export crops are predominantly produced by large-scale commercial farmers who have sufficient financial resources to pay in full for the services provided, as well as a strong interest in high quality research being carried out (Friis-Hansen 1995, personal communication with staff in Ministry of Agriculture October 1999). The privatisation of research into export crops is considerably more difficult in a country like Tanzania, where producers are typically weakly organised small-scale farmers.

The withdrawal of the state from many R&E services and the skewed balance between numbers of employees and operational budgets has made R&E a prime target for retrenchment. In Tanzania, approximately a third of Ministry of Agriculture (MoA) staff were retrenched within a five-year period. Many extension workers in particular lost their jobs. In theory the retrenchment of staff should be accompanied by better access to operational funds and higher salaries for the remaining staff, resulting in the increased effectiveness of their services. In reality, as with other budget cuts, budgetary savings from retrenchment of staff have tended to be withdrawn from the agricultural sector altogether instead of being re-invested in improving performance (personal communication with staff in Ministry of Agriculture October 1999).

In the late 1990s ministries of agriculture in many SSA countries commissioned 'core-functions' analysis, often carried out by external consultants as part of World Bank-sponsored 'Agricultural Services and Management Projects'. The purpose has been to define job descriptions and skill requirements to fulfil efficiently the functions defined as MoA's core business. These changes in function are closely linked to proposed management changes aimed at improving the cost-effectiveness of the remaining services, including improved priority-setting and processes, making R&E more user-oriented and responsive to the requirements of farmers, and improving use of existing resources (Zimbabwe, Government of 1999).

It is too early to judge the impact of these exercises, as they are still being implemented in many countries. However, the feeling of ownership among MoA staff regarding these World Bank-promoted management changes is likely to be limited. This relative absence of the active participation of MoA staff in policy formulation may reduce the impact of such Agricultural Services and Management Projects. The Project Implementation Plan of the Zimbabwean Agricultural Services and Management Project states that the national extension service, Agritex, needs to be re-organised, re-oriented and re-trained; to change its management style and process to one of openness and accessibility; to focus on achieving results rather than controlling inputs; to make all staff accountable for performance and for achieving agreed results; and to re-orient staff attitudes to improve responsiveness to customers (Zimbabwe, Government

of 1999). Achieving such dramatic management changes in an organisation such as Agritex—which has one of the strongest and longest traditions of top-down management and extension delivery in SSA—on the basis of a programme written by external consultants and with suggested implementation by external 'change process facilitators' seems to be rather hopeless.

Decentralisation was widely used in the 1990s as a measure to improve cost effectiveness by reducing the distance between decision-making and users. This is based on the theory that nearness reduces the cost of information flows and negotiation and makes it more likely that decisions and priorities correspond with local requirements. In the late 1990s, both Tanzania and Zimbabwe relocated a large proportion of their extension staff from headquarters and regional or provincial level to district level. However, in both countries, the extension staff have remained employed by, and therefore answerable to, the headquarters of their respective institutions located in the capital rather than to the district councils. In practice this form of decentralisation amounts to 'de-concentration' with little or no effect in improving responsiveness to local demands and hence making extension more relevant and less wasteful.

The links and participatory dialogue between national R&E institutions on the one hand and local specific groups of farmers on the other have only improved marginally, if at all, as a result of R&E reforms. This is a weak aspect of the reforms (Kidd 1999, WB 2000, IFPRI 2000). In particular, there has been considerable conservatism among politicians and Ministry of Agriculture staff in SSA, as well as within the World Bank, with regards to changing the conventional approach to R&E characterised by a high-input–high-output type of research and a top-down Training and Visit (T&V) extension system (Kidd 1999).

The World Bank has thus continued to sponsor T&V extension programmes in SSA throughout the reform period of the 1990s. This continued support was provided in spite of available reviews showing that the T&V objective of using farmer feedback mechanisms has done little to change the traditional top-down approach to formulating 'message-centred' recommendations. A report on the achievements and problems of national agricultural R&E systems (World Bank 1996b) concludes that the World Banks' extension portfolio (of which 90 per cent is based on the T&V model) is expensive and has inadequate funds to operate its services properly; and has insufficient relevant technologies to promote, which was frequently a problem and a major constraint in resource-poor environments; that neither research nor extension was sufficiently conscious of the need to understand the constraints and potentials of the different farming systems as a basis for determining relevant technology and technology-development requirements; and that project design and implementation paid little attention to the farming community's systematic participation in problem-definition, problem-solving or extension programming. The report moreover con-

cludes that a top-down culture is widespread in public-sector institutions in most developing countries and that this persisted in most World Bank projects and has hampered the development of responsive services (World Bank 1996b).

8.3
A new approach to agricultural research and extension

8.3.1 From scientist-managed research to participatory dialogue with farmers

The diverse needs of poor farmers have tended to be neglected by agricultural research, the assumption being that all small-scale farmers mostly cultivate for their own subsistence and that their needs can be met by standard technology packages and advice. Much research in the 1990s showed that poor farmers' research requirements are highly diverse and that their livelihood strategies are dynamic and frequently involve non-agricultural activities (Friis-Hansen 1995, Seppälä 1998).

During the 1990s a growing number of international agricultural scientists and donors involved with support for agricultural development realised that conventional agricultural technologies associated with the green revolution were failing to benefit a substantial number of poor farmers. Indeed, the need among poor farmers for access to affordable technologies that can increase productivity and improve livelihoods is greater today than ever before. This is particularly so in SSA, where farmers are under mounting pressure to increase marketed production and to do so through the intensified use of local natural resources, which may lead to environmental degradation (see chapter 9).

As a response to the inadequacy of conventional agricultural technologies for this significant group of farmers, a new approach to agricultural technology has been emerging over the past decade founded on the principles of: (i) optimising productivity under given environmental conditions using a combination of science and indigenous technical knowledge, and keeping the use of external input (hybrid seeds, agrochemicals, tractor mechanisation and formal irrigation systems) to a minimum (CGIAR 1994); (ii) the participation of stakeholders in the research process, ensuring that the outcome will be adapted to specific environmental and socio-economic situations (Friis-Hansen and Sthapit 2000); and (iii) a holistic approach using inter-disciplinary research to analyse cross-cutting natural resource issues (Izac and Sanches 2000) ; instead of emphasis on simple technological solutions.

The technical elements in the new approach are based on low external inputs. This could be plant breeding which seeks to increase the productivity of local landraces and which ensures that modern varieties satisfy farmers' requirements. Another example would be conservation of local soil and water resources combined with the identification of the key external inputs required

to increase the productivity of existing natural resource use. A third example is integrated techniques for ecological control of pests and weeds.

The social elements in the new approach are based on participatory approaches to technology development and diffusion. Agricultural problems are identified in a participatory manner, relevant stakeholders being identified and involved in the research process in dialogue with scientists and extension personnel. The participatory dialogue with farmers has increased the complexity of the research topics and stimulated interdisciplinary research, involving both natural and social science.

Such technologies have been reported to improve productivity for small-scale farmers, and do so more sustainably than (for example) high-input monocropping, but over a longer time period, less dramatically and generally requiring more labour and care in cultivation (Weltzien et al. 2000). To the farmer, whether large or small, high-input methods will often seem preferable so long as the inputs are cheap and easily available. Thus Nathaniels (1999); has shown that low-input methods of controlling fungus on cashew trees in southern Tanzania are feasible, sustainable and non-polluting. But their adoption seems to be delayed among other things by the concentration of most extension personnel on the supply of sulphur spray, which is funded through an Input Trust Fund. Another example comes from Zambia, where the mid-1980s saw a series of donor-funded programmes to introduce monocropping of hybrid maize under a high fertiliser and pesticide regime. In the late 1980s these fell apart as the projects ended and the subsidies ceased, while devaluation made inputs impossibly expensive. Currently most NGOs in the country are attempting to introduce more economically viable and sustainable cultivation methods, based on open-pollinated seeds, legume-tree fallows and a limited use of purchased inputs. This is, of course, far less popular than subsidised inputs (personal communication with staff in the Zambian Ministry of Agriculture).

8.3.2 From extension to advisory services

Significant production losses are brought about by a range of environmental management problems, which has prompted a need to develop research and advisory services within which agro-environmental linkages can be locally addressed. The restoration and enhancement of soil fertility, catchment management, avoidance of chemical pollution, conservation and sustainable use of agricultural plant genetic resources, as well as conservation of the biodiversity of nature, are among the concerns, which need to be integrated into agricultural R&E.

A new approach to extension is emerging, in which 'extension workers' are being transformed into 'farm advisors' who engage their client farmers in critical thinking about their agricultural endeavours and about the management of their farming enterprises. Instead of being accountable to civil servants, the idea

is that farm advisors would be accountable to farmers, and that their work-plans and activities would be determined by the farmers themselves. They should in a real sense become employees and advisors to farmers, being engaged to help them make better decisions about their farms. A Government of Uganda task force is currently preparing a new programme designed to establish and operate a National Agricultural Advisory Service (NAAS) in which farm advisors will be directly employed at the sub-district level and directly answerable to farmers (Uganda aid memoirs, joint donor mission 1999).

There are still a number of key issues which remains unanswered in this new approach to extension. Firstly, it is likely that only better-off farmers will be able and willing to pay for the services of such farm advisors and that the extension will be socially biased. This is already the case with the existing extension service system. Secondly, and perhaps more important, the exact mechanisms to ensure that the farm advisors are really accountable to farmers are yet unresolved. In the Uganda case, a Danida proposal that the farm advisors should be directly employed by the local branches of an independent farmer association has, for the time being, been rejected by the Uganda government, which insist that the farm advisors should be employed by local government (personal communication with Danida chief technical advisor for the Uganda Agricultural Sector Support Program).

9.
Changes in the Management of Natural Resources in Agriculture

9.1
Agricultural modernisation and structural adjustment

Colonial agricultural policies in SSA were generally concerned with risks of resource degradation arising from the intensification of SSA agriculture. Special attention was paid to the widespread practice of shifting cultivation, which threatened forests, water resources and soils with the destruction of forests through tree-cutting and fires, followed by soil erosion and the drying out and silting up of water sources. Wildlife conservation was the reaction to the expansion of agriculture and livestock into marginal areas. Thus, when environment and natural resource management again emerged as a major concern from the mid 1980s and especially the early 1990s, many SSA countries actually already had fairly elaborate land, forest, water, and wildlife legislation in place. At least theoretically, administrative and legal channels for enforcement were present as well.

In the meantime, however, the political interest had shifted, especially after independence, to a renewed and almost exclusive focus on increased agricultural production. First focus was on export crops using agrochemicals, but from the 1970s food crops and food security were given priority, banking on a replication of Asia's Green Revolution, based on high yielding varieties, fertilisers and pesticides. Ambitious planned settlement schemes with both large-scale irrigation and rain-fed agriculture expanded into marginal areas, widely perceived as under-utilised. From the late 1950s to the early 1980s there was little political interest in SSA and among her donors for environmental issues related to agricultural development, such as deforestation, soil erosion and degradation, or water resources management.

Centralised political and administrative command and control systems, which had formerly promoted soil conservation, including contour ridging, and tried to prevent shifting cultivation and bush fires, were now 'educating' farmers into 'modern agriculture' using industrial inputs, mechanisation, and flat cultivation and monocropping.

When structural adjustment after 1980 began to dismantle this politico-administrative system within and outside agriculture, it was not, however, because of a change of objectives or emphasis, but because it did not deliver the goods. Increased production through agricultural modernisation remained the goal,

but liberalisation was now to be the means. At first, priority was given to the liberalisation of input and produce markets. Theoretically, public sector reform has also been high on the list throughout, but with later and more mixed results. Early demands for land privatisation claimed that this was a prerequisite for production investments and growth, but they were not heeded, primarily because the huge costs of registration contrasted with the simultaneous demands for public expenditure austerity (Migot-Adholla 1991).

9.2
Sustainable development

It was not really until 1985 and later that environmental concerns regained a prominent place in the debate on the development of SSA agriculture (Timberlake 1985, WCED 1987). Since UNCED in 1992, agricultural growth is no longer acceptable unless it is environmentally sustainable. SSA governments which supported the drive towards forest and desertification conventions in Rio, saw in them possibilities to attract additional donor support for natural resource management, and it was only half-heartedly that SSA countries eventually joined in the third-world opposition to a forest convention.

Thus early efforts by the International Union for the Conservation of Nature (IUCN) and the United Nations Environmental Programme (UNEP) to promote conservation strategies among SSA countries were rapidly overtaken when, from 1987, the World Bank introduced its much more comprehensive National Environmental Action Plan (NEAP) concept. The latter became a conditionality for countries, including most of SSA, to receive IDA support after UNCED had called for such action plans under Agenda 21. By 1995 most IDA countries had finalised NEAPs (World Bank 1995), which in relation to agriculture included the well-established concerns with soil and water conservation and reafforestation, but also new elements, such as biodiversity. After UNCED the World Bank also required countries to prepare water resources strategies to obtain loans for the water sector.

Although the NEAP and water strategy exercises have in many ways been the last examples of Africa's development by comprehensive planning (including the lack of discernible impact), proponents of mainstream natural resource management have not seen them as opposed to structural adjustment. Introducing natural resource management alongside structural adjustment was regarded as complementary in the same way as the emphasis from the late 1980s on the social dimensions of adjustment in response to criticism of early adjustment from UNICEF and others (World Bank 1994a), but in contrast, environmental concerns did not emerge in the first place as a criticism of structural adjustment.

While NEAPs and water strategies had strong comprehensive planning elements, they were also seen as part of general public sector reforms (World Bank 1994b and World Bank 1993b) redefining and reducing the role of the state, not just for the sake of financial savings but in fact, it was claimed, to make it more efficient.

These included legal reform. Existing colonial 'command-and-control' environmental legislation had been de-emphasised politically for many years. More recently still the bureaucratic machinery had all but broken down with reduced resources, resulting in haphazard implementation depending more on political and economic leverage than the letter of the law. New land, water, forestry and wildlife acts emphasise legal rather than administrative regulation, market-based incentives rather than political and bureaucratic command and control, and local rather than state rights over resources.

Decentralising basic rights (or ownership) over resources from the state to communities and local governments aims to devolve responsibility for decision-making to stakeholders at what has been called the 'lowest appropriate level', internalise environmental costs, and formalise the articulation of customary and statutory law. Similarly greater emphasis on the economic value of environmental goods and the introduction of tradable resource rights are seen as means of internalising environmental costs and economising in the use of natural resources.

This convergence of structural adjustment with natural resource management did not happen without sharp criticism from environmentalists of the claimed degradation of natural resources resulting from structural adjustment. Early critics claimed that market and price liberalisation gave incentives (as was indeed the aim) for expansion of, for example, extractive timber exports and thus destruction of forests. Later, a dominant argument was that poor subsistence farmers responded to deteriorating economic and social conditions by extensifying their agriculture and over-exploiting and degrading their resources. Predictably, the conclusions of the 1996 WWF study (Reed 1996) lean in this direction, whereas the 1994 World Bank study argues that while the criticism may be true for the early 1980s (when economic decline for the poor was only partly due to structural adjustment), 'adjustment-led growth has probably helped the poor' in the longer term (World Bank 1994a, 165). Both, however, agree that the evidence is mixed and that 'environmental effects depend on specific components of the reform packages, the incentive structure in place prior to adjustment, and the institutional medium through which the reforms are implemented' (Reed ibid., 7).

Surprisingly, both major lines of argument accept that the decrease in the use of industrial inputs is likely to lead to extensification and resource degradation,

and they differ only in how they think adjustment effects the use of external inputs. It is increasingly clear that liberalisation has reduced such use, especially in marginal areas (Scoones and Toulmin 1999). This decrease in external inputs may over time result in that farmers place higher value on their internal resources, which in turn would lead to more efficient use of such internal resources. However, this is likely to depend on options developed by a change in agricultural research for accelerated increase in production (Reintjes et al. 1992).

By the mid 1990s a general consensus on the major elements of structural adjustment had emerged (see Ch. 2), and they were also accepted as the basis for *sustainable agricultural development,* the new catchword of the day, even if there is still a strong lobby for reintroducing fertiliser subsidies under certain conditions.

Most of the macro-economic elements had also been implemented, but carrying out the transfer of authority and resources from old to new institutions is still a major problem—for example, decentralising environmental regulation or getting market-based regulatory institutions working. This often results in a regulatory vacuum and even more laissez-faire realities than before.

There is a lot of open and hidden opposition, not only from those with vested interests in the old regime, but also from both local and expatriate experts and officials, who find it hard to accept that the very peasantry who were supposed to have degraded the resources must now be awarded natural resource management responsibilities. Often community rights over resources and the slowness of participatory decision-making are seen as incompatible with the urgency of environmental intervention.

Faced with such problems, interest in grand environmental planning and reform seems to have faded. Instead the focus has turned towards policy implementation, where, for example, new land acts pose major capacity-building challenges in many countries. Economic incentives do not seem sufficient to induce sustainable growth of agricultural production.

To these ends, a prominent type of donor intervention in SSA in the 1990s has been soil and water conservation, watershed and *gestion de terroire* projects, trying to reconcile resource management with production increase and massive external intervention with local ownership in fairly uneasy balances, which sometimes tilt over in one direction, sometimes in the other, and with very mixed results.

9.3
Towards a more diversified view of agriculture and the environment in Africa

Over the past fifteen years, all the debates and activities reported here have been premised on a common understanding and acceptance of the urgency of addressing environmental degradation, especially in agriculture, in Africa. Scoones and Toulmin (1999, 16) quote the recent brochure of the Soil Fertility Initiative, backed by the World Bank, FAO, CGIAR and others: 'Soil fertility decline is a major limiting factor for agricultural production and economic growth in sub-Saharan Africa'; and they complement it with a quotation from a contemporary joint World Bank/FAO publication: 'The nexus of rapid population growth and high population densities, low productive agriculture, and depletion of natural resources has created negative synergies that exacerbate existing conditions of soil nutrient mining and underdevelopment, thus creating a vicious circle of poverty and food insecurity.' Earlier, hosts of similarly alarmist reports had appeared, concerning forest loss rather than soil degradation, but again with small, poor farmers and their agricultural expansion or intensification as the main culprits.

Recently, however, researchers have begun to question this dogma and the scanty evidence on which it is based. After years of acceptance that deforestation and land degradation were everywhere proceeding apace and that population increase was the major reason, recent research by Leach and Fairhead (1996) and Tiffen et al. (1994) has shown that rates of deforestation, erosion and degradation have often been exaggerated, and that the standard relationship between land degradation and population increase sometimes does not hold and may even be the reverse. Using historical sources, Leach and Fairhead question the extent of widely assumed deforestation in West Africa and suggest that in some cases, rather than destroying the forest, people are actually building and maintaining it.

Some time ago Richards (1985) showed that in certain circumstances shifting cultivation may be sustainable and can even consist of a repertoire of technologies that can be built on selectively in agricultural intensification. For some years too, work by range-land ecologists has criticised the standard assumption that African herders over-graze and has revived the critique of the equilibrium notions of 'carrying capacity' and a static 'climax' vegetation, on the basis of which 'degradation' is measured.

Finally Scoones and Toulmin (1999) demonstrate how the most recent, widespread concern with soil fertility decline is based on a few influential studies of land degradation in Africa, whose own qualifications of their generalisations tend to disappear in repeated quotations. Based on more detailed evidence, they

conclude that *sweeping simplifications can lead to potentially damaging interventions.* On the contrary, they claim, the level of diversity in African farming systems and the complexity of soil fertility issues call for tailored approaches and close co-operation with farmers in designing soil fertility management options.

10. Changes in Investment and Maintenance of Agricultural Infrastructure

10.1 Introduction

Agricultural infrastructure in the context of this study represents the array of goods and services that contributes to the efficient functioning of agricultural production, processing and marketing (both nationally and internationally). This includes rail, ports, airports, roads, water supply, electricity, telecommunications, post-harvest facilities and marketing infrastructure. Irrigation, which provides one of the inputs for agricultural production, at least for some crops, has been included in this chapter rather than in chapter 7 because it needs a higher capital investment and has a higher infrastructural component in comparison with other inputs.

The bottleneck of infrastructure development has not only been lack of capital (which to a large extent has been provided by donors), but also the attitude and mode of operation of state organisations in administering and maintaining infrastructural services. The evolution of the small-scale irrigation sector is an illustrative example of this. The 1970s and 1980s have been characterised as an era of technical improvements in irrigation, with emphasis on top-down planning and the implementation of new irrigation schemes, operated under top-down management of local extension personnel and maintained either by public-sector irrigation departments or not at all (Vermillion 1999). This model has shown to be unsustainable both at the scheme level and for the state organisations involved, whose budgets can no longer afford to subsidise operation and maintenance (O&M). The emphasis today is therefore on sustaining farmer management of O&M at the expense of building further smallholder irrigation schemes.

Infrastructure privatisation in Africa has attracted increasing interest from investors in the telecommunications, water, rail, ports and airports. However, concerns over market size, affordability and payment risks, as well as difficulties in establishing adequate legal and regulatory frameworks and in mobilising local finance have proved to be challenges in this regard (Kerf and Smith 1996). Although the privatisation of these types of 'national-level' infrastructure may hold some promise for more efficient transport and communication in relation to agricultural marketing and processing, the public sector will remain the main

provider of infrastructure at the rural level. Therefore, the continuing reluctance of African governments to invest in rural infrastructure and its maintenance and operation remains a major bottleneck (Cleaver and Donovan 1995, 14). This chapter will focus on key issues in two major infrastructure realms: transport and irrigation.

10.2 Transport infrastructure and agriculture

10.2.1 Recent developments in global transport systems and their impact on African agriculture

Since the 1970s, transport has become a much more integrated part of international production and distribution systems than before. This has resulted in a logistical type of thinking which, supported by liberalisation and privatisation, has led to a rapid transformation of the world transport system during the last decade. Due to the structural adjustment reforms carried out in Africa, this transformation is now having an increasing impact on African economic development in general, and more specifically on the marketing of agricultural produce and the structure of agriculturally based commodity chains (Pedersen 1999). The following discussion outlines some of the major issues in this area.

Although containerisation was originally introduced primarily for manufactured goods, higher value agricultural goods have also started increasingly to be containerised (coffee, for example). An important reason for this trend is that the inward flow of containers to Africa is much higher than the outward flow from Africa. Therefore, in order to secure a return, freight rates are kept lower on outgoing containers than on inward ones. At the same time, the increasing pressure for high quality by importers in industrialised countries opens new opportunities for transporting goods in more protected containers, e.g. refrigerated containers. The process of containerisation has increased the importance of container shipping lines relative to bulk transport. At the same time, liner traffic is increasingly being concentrated in a small number of large shipping companies. These companies appear to be gradually reorganising traditional intercontinental shipping lines from a liner conference system to a hub-and-spoke system characterised by around-the-world lines as the stem, and supplemented by feeder lines linking ports outside the main line with large hub ports on the main line. In this new system, the direct lines between African and European ports will be transformed into feeder lines to hub ports. In the hub ports, the freight is transhipped to the main around-the-world line, which will bring it to its destination in Europe, North America or Southeast Asia. In absolute terms this may not reduce the service to and from Europe, but relative to destinations on the main line, Africa is likely to be marginalized (Pedersen 1999). On the other hand, access to North American and Asian ports, which are currently poorly served, may improve and support the trend towards increasing trade with the industrialising countries of South and

Southeast Asia.

Airfreight is necessary for the growing export of cut flowers and fresh fruit and vegetables. Growing and handling of such crops therefore tend to be highly concentrated around major international airports. Although all-freight planes are becoming increasingly important, much airfreight is still being transported with passenger flights. The current trend points toward a concentration of international traffic on a few hub airports (in Africa, Johannesburg, Nairobi, Lagos, Abidjan, Dakar and Addis Ababa). This will tend to increase the concentration of production of cut flowers and vegetables around the hub airports (some of which are developing large airfreight terminals) to the disadvantage of other African airports.

10.2.2 The African internal transport system

The African internal transport system also changed rapidly during the 1990s. African airlines, shipping companies, ports and railways are undergoing a process of slow commercialisation or privatisation. Some national African airlines may survive this process either as junior partners to some of the large international airlines, or possibly through co-operation among themselves. However, it is likely that many will close or survive as air-charter companies. Few African shipping companies have been able to develop international liner traffic, although some operate national feeder lines or bulk charter to the main African ports. However, many of them already operate only as shipping agents (without ships of their own) for the 40 per cent of freight reserved by UN charter for the national shipping company.

The ports continue to represent major bottlenecks in the transport system. The process of creating hub ports which has taken place in other continents has been slow in Africa, partly because land transport between ports and the hinterland is poor, but also because the ports have not been able to expand their capacity sufficiently to increase their market area. In general, the railways have been hampered by poor and inadequate rail infrastructure, which has been worsened by poor maintenance and management. On the other hand, the railroads undoubtedly have a role to play in future transport systems, and there seems to be considerable private sector interest in their privatisation.

Parastatals and large private enterprises, which used to operate their own truck fleets, increasingly tend to out-source their transport operations to external firms. This is done to reduce costs and to be able to compete with increased imports and with foreign firms (mostly South African) investing in Sub-Saharan Africa. The trucking industry is therefore growing. One of the major causes of road deterioration has been the dramatic and endemic overloading of trucks in most African countries. The insistence of donors that further support of road reconditioning be made conditional on effective implementation of

axle-load regulations may shift the competitive balance between road and rail transport in favour of rail.

Until the late 1980s, the restructuring processes described above had only a limited impact on African agriculture. The containerisation of manufactured goods was largely irrelevant for African agricultural exports. African imports were to a large extent containerised because of the requirements of European exporters. The impact of containerised imports on transport costs was probably limited because African infrastructure was not geared to receive the containers, and because imports were restricted by a lack of foreign currency.

However, during the 1990s, trade liberalisation and privatisation started a process of change, which has been invigorated by increased competition from South Africa following the end of the embargo in 1994. At the same time, the restructuring of the transport system on a global scale, partly as a result of transport liberalisation, is changing the position of Africa in the global transport network. Although these changes in the transport network were originally driven by developments in the manufacturing sector, they are having an increasing impact on the structure of agriculturally based commodity chains.

Most studies on African transport have tended to focus on the generally appalling standards of poor maintenance of the physical transport infrastructure (Pedersen 1999). These studies conceive this factor as a major constraint for African development.[49] However, the developments in the African transport system outlined here indicate that poor information-handling and management of freight flows is as big a constraint as the poor physical infrastructure. This is also an area where foreign firms have been more active in investing in the hope of making a profit.

10.2.3 Rural transport

For most marketed agricultural crops, rural transport is the first link in the transport chain. In many parts of rural Africa lack of market access is a major constraint in expanding crop production for the market, whether national or international (Platteau 1996). In order to overcome this constraint, since independence both governments and donors have invested many resources in rural road programmes, and in many countries the rural road network has expanded dramatically, though it has seldom been well maintained. However, detailed studies of patterns of rural transport carried out since the mid-1980s (Pedersen 1999) show that, even where there is good road access, motorised traffic is responsible for only a minor part of the demand for transport in connection with agricultural production. Most transport in rural areas takes place on the farm, between the fields and the farmstead, or on paths within or between vil-

49) This is partly because most of these studies have been carried out in preparation for large World-Bank or donor-financed investment projects.

lages. This transport is mostly undertaken on foot and sometimes using intermediate forms of transport, such as bicycles, carts or donkeys. This represents a very time-consuming task for farmers, and it is often a major constraint in expanding crop production (Barwell 1996, Sieber 1996 and Leinbach 1995). Therefore, Sieber (1996) argues that rural roads must be complemented with the development and maintenance of footpaths, investments in intermediate means of transport and the location of service activities in such a way that the demand for transport decreases. This requires accessibility-planning based on multi-modal transport (Sieber 1999).

A problem with rural roads programmes is that the existence of rural roads does not in itself guarantee that there is access to motor vehicles. Before structural adjustment, farmers were generally not allowed to trade crops outside their local districts. In most African rural areas, motor vehicles for hire were scarce. Often, the only trucks stationed in rural areas were those belonging to the local traders, who used them for their own (often monopolistic) purposes.[50] In Kenya, the matatus (minibuses) serving the rural areas since the 1970s have played an important role in creating market access for farmers. In Ghana the tro-tro has played a similar role (Grieco, Apt and Turner 1996). However, in Tanzania and Zimbabwe such minibuses were only legalised following liberalisation during the first half of the 1990s.

Trade liberalisation has generally improved the availability of trucks in regional towns, but this is only slowly spreading to the rural areas, especially remote ones. In any case, although the improved availability of urban-based trucks may improve farmers' access to urban and national markets, it does little to improve access to neighbouring villages or to integrate rural markets because costs become prohibitive. The problem is made worse by the fact that the trucks available are run inefficiently and at very high rates.[51] High rates and poor availability of motorised transport in rural Africa means that local rural trips dominate rural patterns of travel. This tends to underestimate the importance of the links between rural areas and national and international transport systems and markets. The lack of integration between rural and national/regional transport is likely to become an increasing problem unless appropriate measures are taken to create transshipment points where trade, storage, repackaging and possibly processing can be integrated with transport.

50) For instance, in the early 1990s, in two district service centres in Zimbabwe which have 10-20,000 inhabitants each (but serve rural districts with 300,000 inhabitants), there was only one truck for hire in each centre (Pedersen 1997a). In one of the two centers, which were revisited in the spring of 2000, the number of trucks for hire had by then increased to more than 50 due to the liberalization of truck transport.

51) Platteau (1996) reports that trucks in African countries run on average less than half the annual distance of comparable trucks in Pakistan and at rates which are more than six times higher.

10.3
Evolution of smallholder irrigation

Inadequate and unreliable rainfall and the recurring threat of drought in semi-arid parts of Africa restrict the potential to develop the rain-fed agriculture on which the livelihoods of most small-scale farmers depend. For such farmers, irrigation represents the single most promising intervention for minimising crop-production risks, raising incomes and increasing food security. Many successful irrigation schemes implemented in the past have (i) increased and stabilised production in these otherwise high-risk farming areas; (ii) permitted an extension of the cropping period; and (iii) raised incomes to the point where such schemes are playing a major role in the economy of their respective localities. Such successes have been achieved under a range of circumstances, with different water-delivery and in-field irrigation systems, organisational status, production objectives, cropping systems and marketing opportunities. The majority of such irrigation schemes for small-scale farmers have been designed and implemented by technical staff from national ministry of agriculture irrigation departments, who have thus gained substantial experience in irrigated crop production.

However, many schemes are failing to varying degrees to fulfil their potential and are faced with a series of technical, social, organisational and economic constraints. The abolition of subsidies on agricultural inputs, electricity and diesel, and the introduction of water fees to cover the cost of providing water to the scheme inlet, have drastically increased operational costs of many irrigation schemes. The transfer of the costs of irrigation-scheme maintenance from the state to the farmers has further increased costs for irrigators. Together, the increased cost of O&M has reduced farmers' income-generating potential on many irrigation schemes. While some constraints could be alleviated through actions taken at scheme level by the irrigating farmers themselves, others require substantial inputs from external sources in terms of expertise and finance.

10.3.1 Smallholder irrigation development after structural adjustment

The implementation of structural adjustment has initiated a process of change with regard to the levels and forms of state intervention in the smallholder irrigation sector. In most African countries, the irrigation department's budget for the implementation of new irrigation schemes and the operation and maintenance of existing state-owned smallholder irrigation schemes has been drastically reduced.

'Core function analysis', undertaken by ministries of agriculture in many African countries in the late 1990s (see chapter 8), has tended to transfer the key functions which, in the past, have been undertaken by national irrigation

departments to either the private sector or to farmers. Such transfer of functions covers (i) responsibility for the design and implementation of irrigation development to the private sector; and (ii) transfer of the responsibility for operating and maintaining irrigation schemes from the state to farmers' Irrigation Management Committees or Water-Users Associations.

The transfer of responsibility for the design and implementation of irrigation development to the private sector is proceeding very slowly, in part because technical expertise within local private companies is very weak, and in part because this policy change is largely driven by World Bank ideology, with little support from employees in irrigation departments.[52]

The transfer of irrigation management from the state to farmers has been a trend in developing countries since the late 1980s and is an ongoing process in Senegal, Mauritania, Niger, Zimbabwe, Tanzania, Sudan, Somalia and Madagascar. While in Africa such transfer programmes have in part been initiated because of inadequate state funds, the new approach to irrigation development has emerged globally as a reaction to the persistent deterioration, under-financing and poor management of state-managed irrigation schemes from the era of technical irrigation improvement in the 1970s and 1980s. The theory behind irrigation-management transfer programmes is an acknowledgement that irrigation systems will not be able to perform as required without basic institutional reform, and this generally means devolving some or all responsibility for irrigation management to local water-users associations (Vermillion 1999).

Irrigation-management transfer programmes in Africa are encountering a number of problems. One immediate problem is resistance to implementing these policy changes among personnel within irrigation departments of ministries of agriculture, who were trained in a top-down planning tradition with an emphasis on technical solutions. There is, however, often political support for irrigation-management transfer programmes within policy-planning departments, and governments simply do not have the funds available to continue the current practice. Another problem is the inconsistency between the training and capacity of existing employees of irrigation departments and the new skills required, which include participatory approaches, to provide farmers with appropriate and effective support services; a capacity to encourage the active involvement of civil society in the provision of such services to irrigating farmers; the ability to collect and disseminate pricing and marketing information; and more.

52) A recent survey of the private irrigation sector in Tanzania revealed no experienced local companies (only several experienced international companies). Moreover, the MoAC does not appear to be ready to work smoothly with the private sector. It is cumbersome to work out contracts for specific jobs and there is no formal agreement allowing irrigation engineers of MoAC to collaborate to carry out joint projects (personal communication, MoAC).

At the scheme level, farmers on irrigation schemes (which until now have been managed by the state) commonly require extensive training to build up a capacity enabling them to manage, operate and maintain the schemes themselves. For some types of irrigation scheme, farmer training is not enough. These are (i) schemes which were technically designed in such a way that operation and maintenance require special skills, equipment or access to information which are unavailable to farmers; and (ii) pump-driven irrigation schemes, which dramatic increases in prices for electricity or diesel and other inputs make unprofitable to operate without external subsidies.

These changes in policies and strategies for agricultural and water-sector development provide a new opportunity to address problems of sustainability in the smallholder irrigation sector. At the same time, the policy reforms have created new challenges for irrigation farmers and other private- and public-sector stakeholders, as they attempt to adjust to the new and changing circumstances.

11. Policy Implications and Future Research Needs

As has emerged from the body of this study, adjustment in Africa in the 1990s has generally produced results far less satisfactory than predicted beforehand, and growth-rates significantly lower than those in the later 1980s. This is quite widely accepted, but here agreement ends. Some feel that privatisation and liberalisation have not been pushed far enough. Others believe that it has been pushed too far too fast, while a third group points to the lack of institutional context to make liberalisation and privatisation work properly, though what they mean by 'institutional development' varies from the development of institutions to support further privatisation to the re-introduction, by one means or other, of institutions seen to be necessary but closed down under adjustment. As will have been noted, the current report lies mostly in this latter range of opinions.

But another finding of this report dictates caution in drawing conclusions and offering recommendations. One of the criticisms that we, and others, have made of structural adjustment is that it has been defined and implemented in a wide range of very different situations and countries with entirely inadequate concern for these differences and following basically the same set of policies throughout Africa. To set out 'Africa-wide' conclusions would be to compound this error, and, to the extent accepted, lead to precisely the policy over-generalisation we have criticised. Our conclusions and recommendations are thus offered as a basis for discussion and refinement in relation to local conditions, and most certainly not for immediate implementation.

With that, we proceed to the presentation of conclusions and (guarded) recommendations, structuring the discussion in terms of the same five propositions set out in the introduction.

11.1 Policy implications

The *first proposition* was that structural adjustment has paid insufficient attention to the effects of globalisation, liberalisation, privatisation (and structural adjustment itself) on the conditions within which adjustment has to be implemented. It is remarkable how consistently predictions of future world commodity prices from the IFIs have forecast rising (or at worst unchanging) commodity prices, in the face of uneven but continuing deterioration, over the past twenty years, in both prices and other market conditions. By virtually any criteria,

the international context within which adjustment has to be implemented has worsened significantly in the 1990s. Trade liberalisation has given little that is positive to African commercial exporters and it has removed some (admittedly relatively ineffective) cartel and quota organisations aimed at maintaining prices. Africa experienced growth during the first three years of the 1990s, but has stagnated since then, growing an average of 3 per cent per annum for 1990–97, the lowest of any major continental grouping. This in turn relates to two major trends in international commodity prices. First, international price indices for crops exported by Africa fell significantly from 1980–1990 and, despite increases since then, have in many cases remained below the 1980 level (at 1980 = 100, coffee = 92, cocoa = 63 and cotton = 85). Secondly, unit export prices received by African exporters for given products have fallen below those of other exporting areas. This relates to increased quality premiums in tight markets (Gibbon and Raikes 2000).

These price trends seem to derive from two main factors. One was the significant response in terms of increased tropical product exports during and since the mid-1980s from exporters other than Africa and its impact on markets characterised by low demand elasticity. The other, whose effect is hard to gauge, has been the effective elimination of the quota system for (say) coffee. This was largely ineffective in its later years, but its final demise in 1990 still led to a major price fall. By contrast, the WTO-induced liberalisation of agricultural markets has achieved very little that is positive for African producers. Even in the early (and optimistic) predictions of gains and losses, Africa emerged as a loser from the process (though on the basis of increased food-import costs). In the event, few of Africa's primary agricultural exports attracted much Northern protection before the Uruguay Round, while reductions elsewhere have eliminated much of its (small) ACP advantage. There are some signs of the increased volatility of international commodity prices with deregulation, though the period is too short to tell yet.

The processing of crops has largely been privatised and/or liberalised, in some cases, leading to increased capacity and improved management. But this has involved a wide range of different processes, from replacing state or parastatal monopolies with licensed private monopolies or oligopolies, to attempts to introduce free entry and competition. By and large, the former, which involve a greater degree of institutional continuity, have worked better. Meanwhile delays in privatising state and parastatal processing plant, combined with soft loans to prospective private operators have led to the construction of new plant, and in some cases caused significant excess capacity. Processing of export crops in Africa has so far been largely confined to simple procedures that are necessary for the qualification of the crop for export, and for various reasons, not much more can be expected in the future. In cases like coffee, further local processing (roasting and blending) would probably add little to value, while adding significantly to transport and storage costs (roasted coffee deteriorates

without vacuum, or at least air-resistant packing). In other cases, like fruit and vegetables, processing, in the form of canning, actually subtracts value in comparison with quality-grading of fresh produce. But, especially where there is considerable value to be added in further processing, this (or at least the value) is largely captured by the large multinational firms applying 'supply-chain management' from the retail level.

The general conclusion regarding prices for most of Africa's export commodities is that prices in general have fallen, and that Africa's export prices have generally fallen in comparison with those achieved by other exporters of similar goods. That is, with tight and oversupplied markets, quality premia or discounts are increasingly important, and (most) African exporters are failing to maintain the level and consistency of quality to qualify for premium prices. Moreover, there seems little prospect of either global trend being reversed in the foreseeable future.

The most general policy recommendation is thus that more attention be paid to such trends in the formulation of policy. More specific recommendations would include the following:

- Establishment (or possibly re-establishment) of institutions capable both of setting relevant quality (taste, look, hygiene, consistency) standards and adjusting them to ongoing market changes, and of enforcing them upon growers. The difficulty is that the latter can be difficult to achieve without some degree of monopsony control over purchases.
- Since competitive small producers and traders with limited access to credit are often at the mercy of large international trading and retailing firms, means need to be found to offer them institutions which can increase their market power. Again, the problem is complicated by the fact that historically institutions set up for that purposes (both co-operative and parastatal) have as often used their market power against their own producers as on their behalf. This implies voluntary membership (until a contract has been signed and then only for the contract period). There are also scale problems, since solidarity and mutual co-operation are easier to achieve (other things being equal) in small groups with multiple links between members.
- Since achievement of quality premia will probably increasingly require integration within 'managed' supply chains controlled externally, institutions at the primary purchase level will need to be qualified to perform the large and increasing range of quality control and packaging requirements which this involves.
- More attention needs to be given to the penetration of home markets by products, which are subsidised (dumped) by their countries of origin – perhaps through the development of simplified procedures for low-income countries, for imposing anti-dumping and countervailing duties.

The second proposition, is that while privatisation and liberalisation of state institutions under structural adjustment to some extent have increased cost effectiveness, the liberalisation process has gone too far and the private sector has failed to take over a number of productive services and functions from the abandoned state organisations. The study has largely confirmed this proposition and it is possible to identify two different sets of reasons why the private sector has failed to take over from the state. The first set of reasons has to do with economic viability. A number of the productive services provided to farmers by parastatal organisations was previously subsidised by the government and it is simply not profitable for private entrepreneurs to continue such activities after abolishment of subsidies. The second set of reasons has to do with the state providing an inadequate regulatory framework under which the private sector can operate. Such regulation relates, among other things, to price setting, orderly service delivery, timing of service delivery and setting and monitoring of quality standards.

The food-crop sector in Africa is the most obvious example of increased cost effectiveness following market liberalisation. The control of food-crop marketing and processing was transferred to the private sector in a relatively short time and high levels of buyer competition have led to the improvement of the timing of payment to farmers. Competition and increased efficiency in marketing and processing have decreased profit margins. As a result, real prices for grain and grain meals have declined after the reforms, thus benefiting consumers, while real producer prices did not generally increase.

The picture of the export-crop sector after liberalisation is much more contested. Market liberalisation has led to an increased proportion of the f.o.b. price being paid to producers across countries and crops. The private sector has become heavily involved in primary buying and exporting. Buyer competition has generally led to faster timing of payments to farmers and, in some cases, to price competition. While concessionary finance has generally been available to processors, it has not been available for buying crops. This has led private buyers to seek pre-finance from international traders and/or to be integrated into their operations through subsidiaries. In some instances, this has also been accompanied by a process of consolidation among exporters.

As buyers also compete over the timing of procurement, excessively early buying of crops from farmers has led to lower crop quality. Also, reliable quality control in the post-liberalisation regime has been often lost at the primary buying level, with the same result. The end of the single channel system also meant losses in the bargaining position in international markets for African producers because of lower economies of scale and difficulties in arranging forward sales. These arguments have been widely used in Francophone Africa for the maintenance of the single-marketing channel for cotton (and, until recently, coffee and cocoa).

Liberalisation of the input supply industry has not provided better access by farmers to the agricultural inputs required to increase production. A major reason why private entrepreneurs only to a limited extent have taken over and improved upon production and distribution of agricultural inputs following the withdrawal of the state, is that the prospects of earnings are low and the risks involved high. The study analyses the liberalisation of African seed industries and shows that while agricultural seed is multiplied and distributed more cost effectively by private seed companies, these companies are only servicing a smaller part of the farmers' seed requirements. While pre-structural adjustment national parastatal seed companies had equity goals which they failed to live up to because of poor management, the private seed companies are efficiently managed but only target the better-off farmers and limit the range and type of seed to those which are most profitable from a seed producers' point of view, e.g. hybrid varieties.

Although the debate has recognised many of the key factors that inhibit a smooth functioning of input distribution in Africa, the main policy recommendations from the World Bank continue to be 'more liberalisation' or measures that could ease the transition to a purely 'free market' system (see Cleaver and Donovan 1995, World Bank 1996, Townsend 1999; Badiane et al. 1997). It has become clear that the guidance for developing policies for a different and much more selective involvement of the state in input supply does not come from the World Bank, but rather from within African countries themselves, with assistance from innovative bilateral donor organisations.

The privatisation of state institutions and liberalisation of input and output markets have gone too far and these institutions have lost much of their 'normal' (non-developmental) regulatory functions, including provision of standardised markets, prices and grading facilities. A major policy recommendation emerging from this study is that African governments need to re-establish these functions. Such a selective re-engagement in the agricultural sector will require a reversal of the tendency of declining investment into the agricultural sector.

In the pre-liberalisation period, aid to African agricultural sectors was, to a very large extent channelled through parastatal agencies (marketing boards by that or an other name). As discussed in Chapter 6, these bodies had (at least in theory) the monopoly control over markets, which would allow them to cross-subsidise input-supply and credit, and to implement other cross-subsidy schemes (like transport equalisation). Programmes and projects operating within such a framework composed a large proportion of total aid aimed at agricultural development. So, with by far the majority of these institutions closed down or privatised, and these sorts of subsidy-based schemes anathematised international donor aid to agriculture has declined by about half over the past twenty years. Meanwhile, as a consequence of structural adjustment, the proportion of African governments' budget, which is allocated to investments in agriculture has declined from typically 15 per cent to less than half this figure.

A call for increased investment in the agricultural sector is in no way a call for a reversal to pre structural adjustment type of agricultural investments. Indeed all evidence suggests that the huge burst of agricultural spending in Africa of the mid-1970s, had a largely negative effect through contributing enormously to the decline in efficiency and honesty of the parastatal agencies through which it was channelled. That is, much of the inefficiency, which neo-liberals see as just an automatic consequence of 'state-control', was actually the result of the aggravation of such tendencies by the 'Dutch-disease' effects of large and poorly-controlled aid inflows during that period.

Increase in investment in the agricultural sector should be highly selective and target areas of activities where government or donor investments can stimulate private sector development and create incentives for local communities to utilise local resources more efficiently. In terms of rural infrastructure, the state has a crucial role to play in complementing the private sector by providing public investment in three key areas:

- Rural transport infrastructure, namely small access roads, village tracks and trails, small bridges over village streams and intermediate forms of transport.
- Rural water infrastructure, namely hand-dug wells, boreholes, hand-pumps and small reservoirs (for livestock and horticulture).
- Village production infrastructure, namely threshing and drying floors, and basic village storage facilities.

Such investments should be accompanied by measures aimed at strengthening institutions, including the facilitation of management and basic O&M by local communities.

The third proposition is that the effects of structural adjustment have been socially and geographically skewed, favouring better-off farmers and farmers living in areas with good market access. The study has shown that in areas that are more remote from main consumer markets and/or less served by transport infrastructure, the elimination of pan-territorial pricing for inputs and crops, combined with the removal of input subsidies, has had a negative impact on food producers. Diversification into other crops (especially high-value-per-weight crops) is only slowly taking place in these areas, as technological opportunities available to farmers are limited.

This skewed development is largely a result of the significant changes in the organisation of input supply and provision of credit to small-scale farmers related to structural adjustment. Prior to the policy reform, most agricultural inputs for small-scale producers were supplied by the monopoly parastatal corporations and/or co-operatives, which purchased crops. The vast majority of rural credit was for inputs and was supplied by or through the same agencies (on behalf of rural credit banks). Although the involvement of the private sector has raised

the efficiency of import and wholesale distribution of inputs, most private input traders run medium to large operations, are based in urban areas, and serve more accessible farmers. As a result, in a free market system of input provision, remote farmers have been penalised. Private export-crop traders have been reluctant to be involved in input provision, except in situations of monopoly or where there is some degree of vertical co-ordination (in the cotton sector, for example) (Kelly et al. 1998, 1999). Market liberalisation and difficult credit recovery have furthermore led to a drastic reduction of access to credit for inputs through the public sector.

In sum, the removal of subsidies for agricultural inputs has left African smallholders more vulnerable. Particularly in peripheral areas, the private sector has not filled the gap left by the government because of high costs due to poor access and falling demand for prohibitively expensive input. The inputs sector in Africa appears to have fallen into a low-demand, low-volume high-input-cost trap (Kelly et al. 1999). In input distribution there is a need for both private involvement and public sector support in establishing institutions that can help solve serious market failures. In the absence of appropriate interventions, the combination of state withdrawal and market failures is likely to marginalize poorer farmers further.

The policy perspective of the above analysis, is that African governments must recognise and address the problems associated with geographically and socially skewed development created by structural adjustment. A policy framework which aims to enable farmers in areas which have been marginalized by structural adjustment to diversify their agricultural and non-agricultural economic activities should be developed and implemented.

The fundamentally important questions, such as how qualitatively to improve internal inputs (i.e. local natural resources and household labour), in particular in economically marginal areas, are barely addressed in World Bank policy discussions. A major issue in this regard is to critically question the continuing viability of a version of agricultural modernisation based on high levels of external inputs. Major currency devaluations in most of Africa, together with the elimination of input, transport and interest-rate subsidies and the institutions through which they were channelled, have meant that inputs of cheap credit are not likely to return in the short or medium term. This has made use of external inputs at previous levels unprofitable for farmers, especially in areas far from major markets, where input prices relative to output prices have increased. This has greatly enhanced the need for 'low external input sustainable agriculture' (LEISA) technologies, which make better use of smaller quantities of purchased inputs combined with improvements of local farming practices. LEISA technologies achieve higher yields than 'unimproved farming', though lower yields than high input technologies, and they often require greater labour inputs. They are thus in some circumstances more sustainable

both ecologically and economically than conventional 'high input(high output' technologies.

Such LEISA approaches to technology, including integrated pest management, participatory conservation and use of plant genetic resources, and integrated soil fertility management, have been discussed and developed within parts of the CGIAR centres, parts of the FAO, by independent researchers, and among numerous NGOs. This debate has been absent from the structural adjustment programme documents and World Bank policy assessments, as these documents assume that additional liberalisation will solve the current problem of market failure for agricultural inputs. This in particular is unfortunate, as discussions among the former group have focused on how to develop the required technologies, while there has been insufficient discussion about the role of the state in providing a policy environment conducive to production and diffusion of such technologies.

The policy recommendation emerging from this analysis, is that African Governments should engage in policies which encourage improvement of the efficiency of farmers use of local resources, in particular in marginal areas. This has two major implications:

- The agricultural research and technology development agenda should depart from the current focus on high use of external inputs as the dominant method for increasing productivity, as this approach is not economically viable for large groups of farmers. The LEISA technologies are providing a sound complementary approach.
- Regulatory policies should allow for a diversification of sources and forms of input supply supporting agricultural production based on LEISA technologies

The agricultural policies in structural adjustment aim at improving the conditions of rural areas by increasing the agricultural producer prices to world market level and in other ways transferring resources from urban to rural areas. A problem which is often overlooked is that this assumes that African rural households are full-time farmers. However, studies from many African countries show that a large share of rural income (often more than half) is due to non-agricultural income from remittances, urban or rural wage income or small non-agricultural businesses, and that many of the rural households (often more than half) produce little or no supplies to sell and need to buy supplementary food at the market.

This means that even where the producer prices have been increased more than the input prices and therefore would benefit a full-time farming household with a marketable surplus, many rural households are hit by the increased producer price (because they need to buy supplementary food) and by the

increased input price (because they have no cash income from sold produce to pay for inputs). At the same time, cutback in urban employment and wages resulting from structural adjustment policies hit many rural households dependent on remittances or wage income from migrant labour. The policy perspective of this is that:

- A policy for African rural development must be broader than a policy for agricultural development, not only because non-agricultural incomes themselves are important, but also because they often are decisive for the rural household's agricultural strategies and investments, and because non-agricultural activities produce goods and services which are important for the productivity of the increasingly diversified agriculture.

The *fourth proposition* is that the public institutions which have survived structural adjustment have inadequately adjusted their mode of operation and functions to post-adjustment realities. The role of many state institutions has changed; from being monopoly implementers, they have become one among several actors as well as being responsible for regulating, supporting and providing an enabling environment for private entrepreneurs. The study has confirmed that such necessary changes have generally not yet taken place and in many cases the process of change has only just begun. A particular point is that this conservatism and resistance to change is not only widespread within the ministries of agriculture in African countries, but is to no small extent also present within the World Bank.

The reform of agricultural R&E under structural adjustment provides an example of such inadequate changes in the mode of operation and functions. In the past, R&E in SSA has been carried out by centralised and increasingly donor-dependent institutions, which have been widely acknowledged to be under-performing. The under-performance of R&E in Africa has been explained by (i) under-funding, and in particular inadequate operational funds for researchers; (ii) poor management of existing resources, including skewed staff composition, lack of incentives for researchers and ineffective bureaucratic procedures; and (iii) lack of relevance caused by an inadequate interface between R&E and farmers. Many African R&E systems have undergone major reforms in the 1990s, with the aim of reducing the scope of state involvement and improving the cost effectiveness of the remaining core functions. The public sector has generally continued to conduct basic research into major food crops, while research into industrial or export crops has been privatised. The R&E services provided by the state are commercialised as much as possible through the introduction of levies and other user fees. However, many politicians and researchers in Africa, as well as in the World Bank, have remained committed to a 'high-input high-output' type of research and to the top-down T&V extension system. This approach is closely associated with high-cost and top-down implemented input-recommendations which are often based on pre-devaluation calculations.

Much research in the 1990s has shown that poor farmers' research requirements are highly diverse and that their livelihood strategies are dynamic and frequently involve non-agricultural activities. As a response to the inadequacy of conventional agricultural technologies for this significant group of farmers, over the past decade a new approach to agricultural technology has been emerging, mainly from international agricultural research centres, founded on the principles of (i) optimising productivity under given environmental conditions; (ii) the participation of stakeholders in the research process; and (iii) applying a holistic approach with inter-disciplinary research into cross-cutting natural resource issues. These research approaches are slowly influencing national research organisations in Africa, although they are not yet having a significant impact.

Similarly, a new approach to extension is emerging, in which 'extension workers' are being transformed into 'farm advisors' who engage their client farmers in critical thinking about their agricultural endeavours and about the management of their farming enterprises. Again, the guidance and inspiration are not coming from the World Bank, but largely from within national extension systems, with support from innovative bilateral donors.

As opposed to earlier top-down approaches, the new sustainable rural development approach must be made much more decentralised and participatory.

As noted throughout the study, both market based and decentralised, participatory approaches require enabling and regulatory state institutions. The need for price and quality controls even in a free market situation was mentioned above. Many SSA countries have realised the need for land reform as a basis for securing land rights in situations of liberalisation and decentralisation of land tenure in agricultural areas. Land commissions in Zimbabwe and Tanzania and new land acts in Tanzania and Uganda have addressed the pertinent issues of integrating customary and statutory laws, and of transferring the radical right to community land from states and state bureaucracies to local institutions, among others as a framework for developing more transparent and secure land markets. However, neither African governments nor donors have begun to realise how crucially such new legal frameworks, including similar ones being introduced e.g. for the management and use of water, forest and wildlife resources depend on establishment of new, strong, enforcing and implementing state institutions with sufficient resources and capacity, e.g. to enforce the rights of the poor and marginalized or safeguard environmental regulations (Rukuni and Boesen 2000).

The *fifth proposition* is that farmers', through local organisations, potentially could play a greatly enhanced role in service provision after structural adjustment. The policy changes since adjustment have only to a limited extent taken advantage of this potential and most African governments have contributed lit-

tle to stimulate and support farmers to organise locally and take on new functions and responsibilities. Such support involves a participatory dialogue between state organisations on the one hand and farmers, local communities, NGOs and other parts of civil society on the other. Farmers need to be given choices and be encouraged to innovate and experiment rather than being pushed to adopt pre-selected technologies by extension services that often lack cutting-edge knowledge. Local state organisations, as well as international research and development organisations, are increasingly realising the need to work closely with farmers and local communities. Many of the sustainable increases in productivity are expected to come from innovative farmers working within a policy and institutional framework that provides the right incentives for environmentally sound rural development and more efficient use of inputs. In many cases this will be good for productivity, input costs and government budgets, as well as the environment (Lutz et al. 1998).

The study identity four areas within which farmers' have gained an enhanced role since adjustment:

(i) Agricultural research and extension. As discussed in chapter 8.3, an increasing involvement of farmers by research organisations, have the prospect of improving the relevance of research and extension processes. The established institutional culture often needs to be radically changed to enable research and extension personnel to engage in a participatory partnership with farmer groups.

(ii) Natural Resource Management. Farmers are increasingly participating in identifying the very nature and severity of the resource-management problems constraining and arising from the development of their farming systems. Farmers and communities must be awarded major rights over their own resources in order to internalise the effects of management decisions.

(iii) Production and distribution of agricultural inputs. As discussed in chapter 7.4, involvement of farmers in decentralised seed production may be a feasible way of resolving the market failure for a range of agricultural seeds. National seed services need to redefine their role and become actively involved with assisting farmers in producing their own quality seed.

(iv) Operation and maintenance of agricultural infrastructure. Following privatisation and liberalisation, irrigation departments are redefining their functions and are providing an enhanced role for farmers. Emphasis is slowly changing from top-down planning and the implementation of new irrigation schemes towards rehabilitating old schemes and ensuring their sustainability by transferring responsibility for O&M from public irrigation departments to local irrigation farmers.

11.2
Recommendations for future research

There is a considerable need for theoretically informed, but fieldwork-based, research concerned with agricultural development after implementation of structural adjustment, aimed at explaining the 'actual' working of agricultural markets and the provision of rural services. In is important that such research consider how economic and social processes work in detail, rather than to generalise to the point where results can be inserted in an overall quantitative model.

There is a lack of empirical evidences which document the effects of globalisation, liberalisation and privatisation on the conditions within which adjustment has to be implemented. There is a need for detailed crop-based research, looking at the different stages of production, processing and sale (including input supply), with the aim of identifying and analysing, over time, where economic/other power is concentrated, the mechanisms by which control is exercised and the means for which it is exercised.

Attention should be paid to identifying the conditions under which the private sector has filled the gap left by retreating public institutions. Where the gap has not been filled, research should inform:

- The promotion of suitable institutional innovations; and/or
- The design of appropriate mixes of public and private service delivery in rural areas. This should be done on a case-by-case basis, depending on agro-ecological conditions, access to markets, and the role of local/national economies in regional/international markets. In particular, attention should be paid to the consequences that the retreat of public institutions from agricultural markets entails.

In the case of crop marketing, these include losses in economies of scale and scope, the elimination of primary-level quality control, and more difficult organisation of forward selling. Research should explore not only the failures, but also the 'success' stories of public crop marketing, such as cotton in Francophone West Africa, and the potential lessons that they teach for other regions and/or crops. Research is also needed on how institutions can fulfil the following functions:

- Promoting national or sub-national 'reputations' and/or 'brands' to profile specific export crops in Northern markets (especially in the fair trade, organic and high-quality niches);
- Providing training in marketing management, product development, logistics and packaging technology;
- Facilitate networking between cooperative societies/farmer associations/traders and Northern NGOs/niche market operators; and

- Ensuring that rules regulating cooperation and competition (including licensing) are clear, consistent, and effectively enforced.

There also appears to be a lack of knowledge about the decentralised mixed privatised/ co-operative/ NGO/ etc. farm input distribution, research and extension systems which are developing after trade liberalisation. There is a need for research which analyse the effects of the combination of state withdrawal and private market failures in food producing areas. In particular areas located outside immediate proximity of major markets, with a perspective of identifying a policy framework, which aims to enable farmers to diversity their agricultural and non-agricultural activities. Such research should include the following:

- Critically question the continuing viability of a version of agricultural modernisation based on research station generated standardised recommended use of subsidised external inputs.
- To accommodate the changes in farmers' requirements for agricultural technology, some research institutes, in particular within the CGIAR, have initiated a participatory dialogue with farmer groups, aiming at developing environmental sustainable agricultural technologies for poor farmers. There is a need to continue and strengthen this interdisciplinary research process and extent it to the national agricultural research institutes.
- Analysis of the policy incentives required for enabling the private sector and farmers' organisations to resolve farm input market failures.

Many investigations now show that a large share of African small-scale farmers rely to a considerable extent on non-farm incomes from non-farm activities, wage work or remittances. Earnings from these sources play an important role for the investments in agriculture just as investments in non-farm activities, such as trade, production and services, often are based on agricultural incomes. However, there is little research on how such non-farm activities influence the agricultural strategies of small-scale farmers.

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