



**Food and Agriculture Organization  
of the United Nations**

**An Assessment of Alternative Mechanisms for Leveraging  
Private Sector Involvement in Poorly Functioning Value  
Chains**

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## **Disclaimer**

The views expressed in this working paper are those of the author and do not necessarily reflect those of the Food and Agriculture Organization of the United Nations.

## List of Acronyms

ACHAP	African Comprehensive HIV/AIDS Partnership
AGRA	Alliance for a Green Revolution in Africa
BMGF	Bill and Melinda Gates Foundation
CERUDEB	Centenary Rural Development Bank
CDC	Commonwealth Development Corporation
CSR	Corporate Social Responsibility
CRO	Contract Research Organisation
DFID	Department for International Development
FDCF	Financial Deepening Challenge Fund
FRICH	Food Retail Industry Challenge Fund
IAVI	International AIDS Vaccine Initiative
ICT	Information Communication Technology
IFC	International Finance Corporation
MAFT	Maendeleo Agriculture Technology Fund
M&E	Monitoring and Evaluation
MMV	Medicines for Malaria Venture
NAADS	National Agricultural Advisory Service
OECD	Organisation for Economic Co-operation and Development
P-A	Principal Agent
PPP	Public-Private Partnership
R&D	Research and Development
TNVS	Tanzania National Voucher System
WCA	West and Central Africa

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## 1. INTRODUCTION

The objective of this report is to, “Undertake an assessment of alternative mechanisms by which public support has been used to leverage greater private sector involvement in poorly functioning value chains. These mechanisms are seen as critical to engaging required levels of private sector engagement in key input and output market services to which smallholders currently have limited access.”

Public support is taken to include interventions both by the state and by donors (including non-profit foundations), as the latter often aim to develop models of intervention which, if successful, could subsequently be owned or imitated by state policy. Whether or not the donor-led interventions considered in this report are transferable to the state is something that will be discussed in what follows.

African agriculture may be thought of as struggling between market and state failure. On the one hand, there has been some disappointment with the private sector response to agricultural market liberalisation, which is perhaps best described as “uneven”. Hence, after a period when the major policy emphasis was on getting the state out of agricultural marketing activity in Africa, in recent years there have been efforts to devise a more active role for the state in encouraging market development, one that goes beyond the creation of a basic enabling environment (supportive legal framework, public investment in roads and other infrastructure). On the other hand, there is also ongoing disappointment with the performance of public sector service delivery, including in – but not restricted to – the agricultural sector. This has led to a search for ways to bring the private sector into provision of services that were traditionally considered to be the preserve of state agencies, often because they have significant public good elements.

This report, therefore, reviews a variety of what might loosely be called public-private partnerships (PPPs)<sup>1</sup> designed to leverage private investment both where existing participation in value chains is considered too limited and into the provision of services traditionally provided by the public sector. Whilst the “failures” that these mechanisms seek to address vary, a common feature of the mechanisms reviewed is that, usually through some form of contract, the state (or other “public” actor) seeks to align the incentives facing private sector actors with public policy goals, such as the provision of public goods or the provision of services to poor groups. Lessons can be drawn across different types of mechanisms regarding the ability of public actors, and particularly African state agencies, to do this.

An “assessment” of such mechanisms can be undertaken at a number of levels. Where evidence is available on the effectiveness and impact of existing interventions, this is reviewed. However, where such interventions are new and/or evidence on their effectiveness and impact has not been collected, any assessment has to be limited to an *a priori* discussion of intervention design, drawing both on theory and on lessons from interventions in other

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<sup>1</sup> The scope of the term “public-private partnership” is subject to considerable debate (Hodge and Greve 2007). Warner et al. 2008, p9 cite the World Economic Forum definition as, “business and/or not-for-profit civil society organizations working in partnership with government agencies, including official development institutions. It entails reciprocal obligations and mutual accountability, voluntary or contractual relationships, the sharing of investment and reputational risks, and joint responsibility for design and execution”. Narrod et al. 2009, p10 provide the following definition of a PPP: “a cooperative venture between the public and private sectors built on the expertise of each partner that best meets clearly defined goals through the appropriate allocation of resources, risks and rewards”.

contexts. Whilst there has been plenty of talk in recent years about innovative public-private partnerships to leverage private investment in poorly functioning agricultural value chains, in practice there has been relatively little action. Many interventions are still at proof-of-concept stage and there have been few formal evaluations. Partly for this reason, but also because some lessons about public engagement with the private sector may transcend sectoral boundaries, the report also briefly reviews experience with certain types of PPP in other sectors, to draw lessons for future initiatives within African agriculture.

The report, therefore, proceeds as follows: In section 2 reasons for the poor functioning of agricultural value chains are briefly discussed. This leads to an understanding of the types of market (and associated state) failures that PPP mechanisms may be designed to address. Section 3 presents a typology of PPP mechanisms that is used to structure later sections. Section 4 draws on principal-agent theory to highlight the major design challenges facing PPP mechanisms. Sections 5-8 review experience with different mechanisms both in non-agricultural and agricultural contexts. In these sections we attempt to answer the following key questions:

1. How strong is our evidence base regarding the effectiveness and impact of the mechanisms in question?

Insofar as we have evidence:

2. Are they effective in leveraging private investment?
  - Do they remove or alleviate binding constraints on private investment?
  - Can contractual arrangements between state and private sector actors effectively incentivise the latter to provide supply chain services in ways that meet public policy objectives?
3. Are they effective in improving the livelihoods of poor households who participate in, or otherwise benefit (indirectly) from the improved functioning of, agricultural supply chains?

Finally, section 9 derives general lessons and conclusions from the review.

## **2. REASONS FOR POOR FUNCTIONING OF AGRICULTURAL VALUE CHAINS**

As noted above, there has been some disappointment with the private sector response to agricultural market liberalisation in Africa, which is perhaps best described as “uneven”. Private traders have generally taken up the opportunity to purchase output from producers, although - predictably - levels of entry and competition vary considerably across areas (low vs high agro-ecological potential, near or remote from major market centres). As a broad generalisation, private sector participation in the provision of pre-harvest services has been more limited than participation in output marketing, which in turn has had knock-on effects on density and efficiency of output markets. However, here there have been significant differences across crop groups, with the incentives for private sector investment in pre-harvest service provision for traditional export cash crops generally much stronger than for food crops (Poulton et al. 2005). Private investment in crop storage has been another “disappointing” area, contributing to increased price volatility post-liberalisation.

The reasons for these outcomes remain contested (Poulton et al. 2006a). Jayne et al. 2002 argue that states have not fully withdrawn from many input and output markets and that their continued presence – and/or the continued threat of state intervention – discourages private investment. Commission for Africa 2005 emphasise the impact of low public investment in basic infrastructure on private investment opportunities in agricultural marketing (see also Jayne et al. 2003). Kherallah et al. 2000 argue that important institutions required to support efficient private markets have not been established (see also Fafchamps 2004). Going somewhat beyond this position, Poulton et al. 2006a argue that there are important coordination issues that have to be tackled in order to overcome “low level equilibrium traps” constraining agricultural production and marketing activity in many parts of rural Africa. Many of these arguments relate first and foremost to domestic agricultural markets, which, in total value terms, are the most important for African producers (Diao et al. 2003). However, simultaneously there is recognition that market requirements in important export markets are continually tightening, as consumers, retailers and legislators demand greater assurances about produce quality and safety. This makes it difficult for African supply chains, especially those relying on large numbers of smallholder producers, to stay competitive in international markets (Otsuki et al. 2001; Henson and Reardon 2005).

As greater emphasis has been placed on the role of transaction costs and the associated risks in constraining private sector activity in African agricultural markets, so there has been a search for ways in which public agencies might share some of these costs and risks, in order to encourage greater private participation and investment in the markets concerned. Many of the interventions discussed in this report have this objective. However, this brief review of debates about the private sector response to agricultural market liberalisation highlights the following critical point: high transaction costs are not the only constraint to greater private sector investment in African agricultural markets and, some would argue, often they are not the binding constraint. Innovative public-private mechanisms to encourage greater private participation will only be effective where they tackle the binding constraint to such participation. Whilst a sharing of transactions costs and risks could partly compensate for high costs due to a weak “enabling” environment (e.g. an unstable macro-economic environment or inadequate physical infrastructure), it alone is unlikely to stimulate greater private investment where unpredictable state (sectoral) policies are what currently discourage such investment.

Meanwhile, as also noted above, forms of public-private partnership have also been experimented with to stimulate private involvement in the provision of services traditionally provided by the public sector. As explained above, the immediate reason for seeking to engage the private sector in provision of such services is so-called state failure. However, the reason that these services have traditionally been provided by the public sector is market failure, often related to the goods or services in question having public or merit good attributes.

Table 1 thus summarises a range of sources of market failure affecting African agricultural markets and indicates where some form of PPP might be explored to stimulate greater private involvement. As will be seen, the interventions discussed in this report span most of the rows this table. In addition, there has been plenty of public (mainly donor) investment in the provision of marketing information and business development services (row 4). However, whilst these do constitute a “mechanism” for encouraging private sector involvement in poorly functioning value chains, they do not share the common feature of PPP mechanisms highlighted above whereby the state (or other “public” actor) seeks to align the incentives facing private sector actors with public policy goals, usually through some form of contract. These are, therefore, not considered in this report.

**Table 1: Sources of Failure in Agricultural Markets**

Source of market failure:	What is the constraint to private sector involvement?	Possible PPP Solutions
1. Lack of enabling environment	Unstable macro-economic environment; Inadequate physical infrastructure; Weak property rights and/or contract enforcement; State <i>as</i> problem (crowding out, unpredictable policies)	PPPs for provision and/or maintenance of infrastructure
2. Public goods	Non-excludability, non-subtractability	Contracting out for service delivery; Facilitate private coordination for “club good” provision
3. Merit goods, (or goods with positive externalities )	Social benefits exceed private benefits and/or lack of effective demand; hence market “under-provides”	Contracting out for service delivery; Subsidies
4. Barriers to entry	Lack of access to: Capital Training (technical information) Market information	-
5. High transaction costs/risks (in relation to transaction size)	Imperfect information about attributes or actions of other actors and/or attributes of goods being sold	Certification; Publicly supported assurance schemes; Risk sharing schemes
6. Coordination failures (complementary investment)	Asymmetric information, no mechanism to enforce commitments; hence lack of trust	Deliberative fora

### 3. PUBLIC-PRIVATE PARTNERSHIPS: A TYPOLOGY

Table 1 showed that PPPs might, in theory at least, offer solutions to a number of the market (and associated state) failures affecting African agricultural markets and value chains. In Table 2 public mechanisms for leveraging private sector involvement and investment are categorised according to four main objectives, although, as will be seen, there is some blurring of boundaries between categories. The numbers in the first column of Table 2 correspond to the row numbers in Table 1, showing which market failures these mechanisms might seek to address.

This typology is used to structure the remainder of the report. For each category Table 2 identifies sectors outside agriculture where the relevant mechanisms have been used, as well as applications related to agricultural supply chains in developing countries. Experience with the former will be briefly reviewed, as it can shed useful light on our assessment of the latter.

**Table 2: Mechanisms for Leveraging Private Sector Involvement and Investment**

CATEGORY	SUB-TYPE	NON-AGRICULTURE	AGRICULTURE
1. Capital Investment (and Maintenance)		Roads Prisons Schools Hospitals	Rural roads Irrigation Market Places Rural ICT
2/3. Service Delivery (ongoing)	a) Service Contracts	Water Solid waste Primary health care contracts	Extension (Chile 1983-, Uganda NAADS) Maendeleo ATF
	b) Demand stimulation	Bednet distribution	Fertiliser vouchers Extension vouchers
5. New Products and Services (“bottom of the pyramid”)	a) Investment Funds	Challenge funds, matching grants	
		Neglected health research, vaccines	Research outputs New seed varieties
	b) Loan Guarantee Funds	-	Loan guarantees to stockists, banks
	c) Leveraging CSR	Mining DANIDA	-
6. Coordination (Deliberative fora)		Health investment funds have important element of this	Zambian cassava Practical Action Warehouse Receipt initiatives

The first category in Table 2 is public-private partnerships for capital investments, such as large-scale infrastructure projects. These feature prominently in the literature on public-private partnerships in OECD countries, but have also been used in Latin America and elsewhere for non-agricultural purposes and are now also being experimented with in relation to agricultural supply chains in developing countries.

The second category covers services that have traditionally been delivered by the public sector (in both developed and developing countries), but which in some countries have been

contracted out to the private sector during the past 15-20 years. These services have traditionally been delivered by the public sector for a number of reasons. They may have public or merit good attributes and/or in low income countries willingness to pay for them may be low. In many cases, therefore, it is believed that the public sector will have to continue to finance the provision of the service (even if the private sector delivers it) for the foreseeable future. In other cases, however, there is some debate as to the root cause of low willingness to pay. Some argue that, with greater familiarity with the good or service after a reasonable period of improved access, consumers might become willing to pay sufficient to sustain a commercially provided service. In this case, public funds may be used to stimulate demand for the service in the short-medium term, whilst private supply capacity develops, in the hope that eventually a self-sustaining private market for the service will develop. This, therefore, represents an intermediate case between contracting out of a public service and support for the development of new products and services by the private sector, which is the third category. Expressing the distinction between service delivery and new products/services in this way highlights the importance of considering exit strategies for the public sector from public-private partnerships.

The third category covers the development of new products and services for so-called “bottom of the pyramid” consumers. Given the income levels of these consumers, margins are typically low, so firms have to achieve scale if their investment is to be worthwhile. This, however, makes the investment very risky: will the logistics of delivering the new good or service work? Will customers buy it? PPPs in this category thus aim to share the costs and/or risks at critical stages of the product development process until the viability of the product or service is established. Once it is established, however, the assumption is that the private sector partner will make the necessary investment to scale up delivery. Two main sub-types are distinguished in this category. In the first case, the public agency provides some form of matching grant to a private sector partner as a way of sharing costs and/or risks at critical stages of the product development process. The second case is specifically designed to encourage provision of new financial products and/or extension of existing products to new client groups. In this case, the public agency provides a guarantee fund to share the risk as the private sector partner gathers information regarding, and expertise in dealing with, the new client groups.

Table 2 also contains a third sub-type within the new products and services category: leveraging corporate social responsibility (CSR). This is the principal objective of the DANIDA PPP programme (Kirkemann and Appelquist 2008), with the emphasis as much on new processes and ways of working as on new products and services per se. Similarly, Dansereau 2005 assesses attempts to use PPPs in the mining sector to promote various forms of corporate social responsibility. These are not judged to be very successful due to the power of major mining companies and the fact that investments follow major deposits in a way that tends to marginalise ethical considerations. This third sub-type is not considered further within this report.

Deliberative fora (the final row of Table 2) are a bit different in nature from the other mechanisms discussed in this paper. Such fora bring together stakeholders from public and private sectors for dialogue that, it is hoped, will lead to joint action. This joint action could include the types of contractual arrangements discussed in other sections. However, it could also include coordinated actions by private players, where the role of the state is limited to that of discussion facilitator, or private investments that are encouraged by changes made within the policy or institutional environment as a result of the forum deliberations.

## 4. THEORETICAL CONSIDERATIONS

This report reviews mechanisms through which the state (or other “public” actor), usually through some form of contract, seeks to align the incentives facing private sector actors with public policy goals, such as the provision of public goods or the provision of services to poor groups. Contract theory, and especially principal-agent (P-A) theory, can thus shed some light on the types of challenges inherent in devising and managing effective mechanisms.

Applying P-A theory to PPP interventions, the principal is the state (or other “public” actor) and the agent is the private sector company, partnership or consortium that the state contracts with. The state wishes to harness the capacity (human and investment), entrepreneurship and innovation of the private sector “agent” to achieve public policy goals, but has to recognise that 1) private sector “agents” have their own objectives and 2) will only enter into deals if they think that these will in some way be furthered by implementation of the PPP agreement. Specifically, firms will only enter into PPP agreements if their expected “utility” from concluding the deal exceeds what they could obtain from directing the same resources to alternative uses, i.e. the opportunity cost of these resources. (This opportunity cost is known as the agent’s reservation position).

The divergence in objectives between state agencies – supposedly pursuing public policy goals, such as the provision of public goods or the provision of services to poor groups – and private sector agents can be illustrated as follows: It is commonly assumed that the private sector ultimately seeks to maximise profits, although there may be intermediate objectives towards this general goal. Pursuit of profit can encourage private sector actors to cut costs (raise efficiency), innovate or expand service coverage (in such a way that the total size of the market increases). It is this entrepreneurial energy that PPP agreements aim to harness in pursuit of public goals. However, private sector actors will only act in these ways if external conditions (market competition; failing that, the incentives provided by a contract) demand it. Alternatively, they might seek to profit by increasing margins, reducing quality or displacing competitors (expanding their market share without increasing the total size of the market). A contract with a public agency could provide a source of rents that enables them to do any of these things.

This divergence in objectives between public and private makes some observers wary of any form of PPP agreements. They fear that, far from advancing public policy objectives, such agreements will simply squander public resources on the enlargement of private profit, with no improvement in service delivery. From the perspective of P-A theory, however, the challenge facing the state is to:

- Identify appropriate private sector players to contract with;
- Through the terms of the contract, structure incentives so that the actions of the private sector “agent” coincide as far as possible with what is in the “public interest”;
- Achieve all this at reasonable cost (otherwise the efficiency and other benefits of harnessing private sector capacity will be lost).

At the heart of P-A theory is the problem of asymmetric information. If the state had perfect information, concerning both the capability and motives of potential private sector partners (prior to signing of a contract) and the actions and motivations for these actions (during implementation of a contract), the challenge above would be fairly straightforward. However,

in reality these things are at least partly hidden from everybody except the (senior management of the) firm itself.

Hart and Holmstrom 1987 distinguish three types of P-A models:

- Adverse selection, where the main challenge facing the principal is to choose an agent that has the capability and motivation to do what the principal is looking for;
- Moral hazard (hidden action), where the main challenge facing the principal is that it cannot observe the actions of the agent, although it can observe the outcomes;
- Moral hazard (hidden information), where the main challenge facing the principal is that, whilst it can observe the actions of the agent, it cannot observe the contingencies under which they were taken.

An important confounding factor in all cases is that there are risk factors beyond the agent's control that affect the relationship between the agent's action and the observed outcome. Hence, where the outcomes of contract implementation are not those desired by the principal, it is difficult to be sure whether these resulted from actions or decisions of the agent that the principal would not have approved of or from the exogenous risk factors. The combination of the asymmetric information constraint and the risk factors restricts the principal's choice of indicators for inclusion in the contract: what is observable and, therefore, measurable? However, use of "second-best" indicators can distort the incentives faced by the agent, so considerable care has to be taken in contract design. A third possible reason for poor outcomes of contract implementation (i.e. not contributing to public policy goals) is simply that the contract was poorly specified.

Even brief consideration of P-A models, therefore, focuses attention on:

- Ways of choosing appropriate private sector players to contract with;
- The design (terms) of the contract, including the performance indicators specified and the rewards for compliance and sanctions for poor performance;
- The importance of effective monitoring of contract implementation.

Three additional issues are also worthy of note. Firstly, moral hazard P-A models generally assume that the principal has a reasonable understanding of the "utility function" and "reservation position" of the agent. Indeed, the principal is assumed to optimise its expected utility (assuming a range of possible states of nature - the risk factors alluded to earlier) based on an understanding of how the agent will respond to given incentives. The principal achieves this optimisation by providing a set of incentives that will allow the agent to just achieve its (expected) reservation position, i.e. get just enough out of the contract to make it worth while signing the agreement. Whilst some public agencies are able to contract personnel with this level of understanding of large private sector operations, the analytical capacity of many African state agencies with respect to private sector business models is arguably rather more limited than this.

This is compounded by the second issue. It is assumed that the principal can push the agent down to its reservation position because the agent is a price (or contractual term) "taker" within a competitive market. However, where PPP agreements are designed to leverage greater private sector involvement in poorly functioning value chains, the number of potential partners will often be small. (Otherwise, the value chain would likely be performing more efficiently). This gives the agent more active bargaining power, beyond a minimum reservation position that can be determined (to a greater or lesser degree) by reference to other market transactions. It is also worth noting that one way of avoiding adverse selection is to

prefer to work with “established” players. However, narrowing the choice in this way increases the chances that the agent will exercise considerable power in contractual negotiations.

Indeed, given the disparity in resources between some African state agencies (or personnel working within them) and some large private companies, the private sector agents may not just exert power in contract negotiations, but may even “capture” the agency or personnel that are supposed to be acting as the principal. Thus, the institutional set-up for devising and implementing PPP agreements should include provision for holding the principals accountable for their actions. Asymmetric information again comes into play here. As already noted, in some contexts public officials – or consultants hired by such officials - who truly understand private sector business models and operations are likely to be scarce. If they defend the deals struck on the basis that they were the best terms on which the public sector could harness the desired private sector expertise, it may be costly for those holding them accountable to discern the truth or otherwise of such claims.

Table 3 considers three of the PPP mechanisms reviewed later in this report in the light of P-A theory. The three mechanisms illustrate all three of the main P-A model types distinguished by Hart and Holmstrom 1987. How effectively these mechanisms have guarded against the dangers created by asymmetric information in practice is examined in later sections.

**Table 3: PPP Mechanisms as Principal-Agent Models**

	Extension Contracts	Challenge Fund	Guarantee Fund
Classification	Moral hazard (Hidden action)	Adverse selection	Moral hazard (Hidden information)
Major danger	Shirking on extension quality	Subsidy to poor project or project not requiring public support	Guarantee used to obtain competitive advantage in serving existing market
Desired outcome	Technology adoption by farmers	New products adopted by farmers	Greater access to services for poor/rural clients; no recourse to guarantee fund
Agent’s action	Delivery of extension advice	New product roll-out	Services provided to new clients
Are there risk factors beyond the agent’s control that affect the relationship between the agent’s action and the observed outcome?	Yes – weather, farmer preferences (poorly understood?), market prices, availability of complementary services	Yes – consumer acceptance: high risk in rolling out new product, especially with low margins, hence scale needed	On recourse to fund, yes – major covariant risks affect both fertiliser sales and agricultural finance
To what extent are agent’s actions or effort observable?	Only farmers can observe extension quality; principal may try to track quantity of visits	Fund manager can track through regular reporting requirements and follow-up	Loan disbursements can be tracked with strong M&E system
Incentives to achieve desired outcome	Contract renewal; involvement of	Threat of grant cancellation	Terms of guarantee contract

(avoid moral hazard)	farmers in selection		
Mechanisms to avoid adverse selection	Contract renewal; involvement of farmers in selection	Competitive bidding, independent panel; work with established players	Due diligence on commercial partner; work with established players
Are “utility function” and “reservation position” of agent readily understood?	Yes: repeated contracts, multiple providers	More so with competitive mechanism, but still attribution problem	Basic financial model understood; precise position difficult to gauge – expect negotiation?

## 5. PPPS FOR CAPITAL INVESTMENT

### *5.1 Non-Agricultural Experience*

International experience with PPPs for infrastructure investment (in other words, variants on the Private Finance Initiative model first developed by the UK government) is reviewed by Hodge and Greve 2007, 2009. International here largely refers to OECD experience. They comment that the concept has received plenty of attention, because PPPs are perceived by many as a way “to combine the strong sides of the public sector and the private sector” (p545). They also note a good number of positive assessments of PPP experience (both individual studies and reviews), but argue that these are balanced by equally authoritative studies and reviews that reach more negative or sceptical conclusions.

Two main arguments are advanced for PPPs in infrastructure investment. The first is that they can relieve pressure on the public budget, because private firms assume responsibility for raising finance necessary for infrastructure investment. The second is that, by involving the private sector in this way (sharing some of the risks inherent in infrastructure provision), the state can achieve better value-for-money in infrastructure provision. On the first claim, Hodge and Greve 2007 observe that there is little evidence that money “saved” through resort to infrastructure PPPs is, therefore, diverted to other pressing uses. Moreover, it is only the need for lump sum payments that is saved by PPPs: states still have to remunerate the private partners eventually. Thus, infrastructure PPPs really amount to “a mechanism through which governments may turn a large, once-off capital expenditure into a series of smaller, annualized expenditures” (p549)<sup>2</sup>. The exception here is where some or all of the cost of the investment can be recouped instead through user fees. Evidence on the second claim is mixed. A methodological challenge is to establish the appropriate public-sector-only counterfactual against which costs of a PPP project can be compared. Assessment is further complicated by the complex remuneration formulae embodied in some long-term infrastructure maintenance contracts. Both Hodge and Greve 2007 and Hodge and Greve 2009 cite the view of one UK assessment that PPPs have performed better for roads and prison contracts than for schools and hospitals. However, they do not point to any intrinsic attributes of roads and prisons or schools and hospitals that might contribute to this result. Indeed, it could simply be that the state agencies responsible for roads and prisons did a better job in structuring and negotiating contracts than their counterparts responsible for schools and hospitals.

Warner et al. 2008, p45-46 also briefly review experience with PPPs for water, health and education infrastructure in developing countries. They observe that private operators frequently complain that governments exhibit insufficient commitment to PPP agreements, especially after political change-overs. PPPs can be viewed by politicians as ways of getting more for less and/or may be treated as opportunities for rent-seeking. In other words, if the real constraint to infrastructure investment is lack of commitment to public service delivery by politicians, then PPPs may not solve the problem. Warner et al. 2008 recommend:

- More transparent procurement and bidding processes
- Mechanisms, such as multi-stakeholder fora, for infrastructure beneficiaries and the wider public to have a voice regarding the various service delivery options

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<sup>2</sup> Similarly, Warner et al. 2008 describe the UK’s Private Finance Initiative (PPP) for infrastructure construction and management as “the Government effectively taking out a repayment mortgage with the private sector” (p29).

- Private sector operators to build strong relationships with customers, who “may then be a source of support in disputes with political leaders” (p46).

## *5.2 PPPs for Construction and Maintenance of Agricultural Infrastructure*

Use of PPPs to leverage private investment into the construction and maintenance of agricultural infrastructure has recently been reviewed by Warner et al. 2008. They argue that, "A major, if not the major, component of competitiveness in agricultural value chains is the cost of infrastructure to support on-farm production, to facilitate efficient trading and exchange, to add value through processing and to transport produce from farm gate to processing facility and onto wholesalers" (p4). However, whilst government and donor investment in rural infrastructure projects fell during the 1980s and 1990s, the private sector investment that some had hoped would replace it did not materialise. Volumes of business in much of rural Africa are currently too low to fully recover investment costs in infrastructure, whilst revenue streams that are dependent in some way on volumes of rainfed smallholder agricultural production are considered too risky by many private investors.

Where poverty reduction or strategic agricultural development goals dictate that infrastructure should be provided<sup>3</sup>, however, there may be advantages to private sector participation. The main ones are those discussed by Hodge and Greve 2007 above: the ability of the private sector to source investment capital (thereby easing immediate constraints on the speed of infrastructure investment imposed by limited state development budgets, but at the cost of increased demands on future recurrent budgets) and benefiting from the project management skills of private companies. Under a conventional construction contract, the state or other public agency might simply pay a private contractor to construct the infrastructural asset in question, with subsequent management and maintenance of that asset handled (perhaps by a state agency) through separate arrangements. By contrast, under a PPP approach, the same private firm might be engaged both in construction and subsequent management. It would generally put up some of the investment capital and be paid over time through a revenue stream somehow linked to asset management, utilisation or performance. This can reduce the incentives to cut construction costs in ways that undermine future performance of the asset (e.g. road surfaces that pothole very quickly), whilst also encouraging sharing of risk (e.g. risk of cost overruns, lower than expected utilisation of the infrastructural asset) by the private sector.

Perhaps the key question then is what form the revenue stream for the private company might take. In practice, it might be spread across a number of sources, including user fees, subsidy (including so-called “shadow tariffs”) and purchase agreements. Potential for user fees varies by type of rural infrastructure (compare irrigation with feeder roads). Shadow tariffs, whereby the sum paid by the public partner to the private operator depends on utilisation rates or other dimensions of performance<sup>4</sup>, are a way of encouraging the private sector to share some of the risks associated with infrastructure construction and operation. Warner et al. 2008 discuss the

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<sup>3</sup> Warner et al. 2008 emphasise that strategic planning should come before decisions are taken on whether or not to seek private sector participation in infrastructure development, and recommend use of value chain analysis within strategic planning exercises.

<sup>4</sup> For example, payments for irrigation investment could be tied to the socio-economic status of beneficiaries, in order that the private developer does not simply service well-off clients whom it can charge the highest user fees. Part of the payment for a roads contract could be tied to the number of hours or days that the road is impassable during the rainy season.

benefits of “bundling” contracts for complementary infrastructure investments, which nevertheless have different revenue and risk profiles – for example, feeder roads + agro-processing, irrigation + power generation – as a way of making private investment in certain types of infrastructure more attractive.

Alternatively, for some types of investment (the main example provided concerns a dairy processing facility in a pastoral area of Kenya), the public contribution to PPP financing might be a grant covering part of the initial capital costs, leaving all other financing and risk-bearing in the hands of the private party<sup>5</sup>. This model, however, assumes a reasonable ability to collect user fees or otherwise generate commercial revenues from operation of the resulting asset.

As with many of the mechanisms for leveraging private sector investment in agricultural value chains reviewed in this report, experience with PPPs for rural infrastructure in developing countries is still fairly limited. Warner et al. 2008, p10-11 cite World Bank figures showing that only 1% of private investment in infrastructure during 2003-05 was in investments directly or indirectly related to agriculture (i.e. including rural electrification and telecommunications). Their report is based on a review of 35 PPPs for rural infrastructure (apparently chosen on an ad hoc basis, which gives little indication of how large the population of such agreements currently is). Five of the PPPs that they discuss in some detail are found in East Africa.

Warner et al. 2008’s own conclusion is that PPPs can have a number of advantages and that conditions are in many ways right for their use to be expanded, but that they are “by no means a panacea” (p6) for problems of rural infrastructural investment. Potential pitfalls include:

- Lack of real political will. As noted above, politicians can have various motives for seeking to leverage private investment in infrastructure provision and may renege on agreements that turn out to be politically unpopular, for example due to high user fees charged;
- Lack of capacity (on both sides, but particularly within public agencies) to structure and negotiate deals that deliver value for money for the state and its citizens, whilst still providing a sufficient return on investment to be attractive to private investors. A number of international organisations do now exist to provide advice to states on such matters. However, this is new territory for many state agencies;
- Competitive bidding processes to ensure transparency in contract allocation have high fixed costs. Relatively large projects are required to make these costs worthwhile. Equally, the set-up costs of a PPP, which also include the costs of negotiating a final contract with the selected bidder, have to be offset against any efficiency gains from private sector involvement;
- In the absence of a suitable regulatory framework, private investors may pursue pricing policies that exclude poor groups, thereby undermining the “public” nature of benefits from the infrastructure investment.

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<sup>5</sup> This model is similar to the investment fund model discussed in section 7.

## **6. CONTRACTING THE PRIVATE SECTOR FOR SERVICE DELIVERY**

A number of contractual forms related to service delivery have been given the label “PPP”. These include franchising, leasing of equipment by the state to the private sector and contracting out of responsibility for service provision. However, the last of these has been the dominant form and is what is discussed here. Non-agricultural examples are more numerous than agricultural. These experiences are important, however, because they reveal the capacity of African states to enter into efficiency-enhancing contracts with the private sector – unlike the mechanisms reviewed in section 7, which to date have largely been donor-controlled.

### ***6.1 Non-Agricultural Experience***

In this section we report experience with contracting in water, waste management and health sectors. The studies cited are in no way a comprehensive review of experience in the three sectors. However, they do reflect the fact that experience with the contracting out of service delivery – or, at least, the early (1990s) experience – fell far short of the claims made by its proponents, based on theory and OECD experimentation. Contracting out does not avoid the problems of state failure that led to the original dissatisfaction with public service delivery. Rather, state failure can manifest itself in new, equally costly forms.

#### **6.1.1 Water**

Experience with private sector management of water supply systems (mostly urban) has in general been quite disappointing. It is estimated that more than 40% of PPP water contracts in Africa have been cancelled before completion or are in trouble (Kayaga 2008). This reflects fundamental techno-economic characteristics of water supply systems, specifically the combination of very high costs of constructing distribution (pipe) networks on the one hand<sup>6</sup> and low willingness to pay for public water supplies (due to low incomes and popular beliefs that access to water should be a right<sup>7</sup>) on the other. In some cases private management has led to improvements in service quality and reliability (for example, due to improved maintenance regimes). There are also some examples of costs savings. However, contracts have attracted little investment in new or expanded distribution networks – hence little new access - and overall most services haven’t improved much. In several cases charges have increased and services to the poor have deteriorated (Kayaga 2008).

Kayaga 2008 notes the importance of both contract design and the contractor selection processes if contracting out of services is to improve efficiency. Tati 2005 presents a case of contracting out where most mistakes that could be made, were. There was no stakeholder engagement prior to the setting up of the contract, as a result of which delivery arrangements did not match demand. Tendering was not open and was not competitive. The contract design allowed for little risk sharing. Monitoring of subsequent performance was poor. A point worthy of particular note is that there was also no assessment of private sector capacity prior to embarking on the contracting out process. Where services have traditionally been provided by the public sector, one should not expect strong domestic private sector capacity to exist.

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<sup>6</sup> Investment costs for sewerage systems are even higher (Mugisha 2007).

<sup>7</sup> Muller 2003 notes the difficulty of disconnecting non-payers under either public or private management.

This means that contracting out will have to depend either on foreign service providers or on public servants reconfiguring themselves as private sector operators.

Meanwhile, drawing on experience in Uganda, where new public management – style incentives have been introduced into the National Water and Sewerage Commission, Mugisha 2007 shows that linking organisation revenue and staff pay to performance (for example, staff per 1000 connections, other operating costs, ratio of water billed to water delivered, income collection performance) can increase efficiency even within the public sector. However, he argues that private contractors are often chosen because it is believed that flexible pay and performance incentives can only be introduced within private sector organisations. Regrettably, this is often the case due to the rigidities of public sector employment conditions<sup>8</sup>. Equally, however, mechanisms for risk sharing have often been absent even within service contracts with private operators.

### **6.1.2 Waste Management**

Awortwi 2004 contrasts a generally positive literature on service delivery benefits from PPPs (little of it relating to Africa) with the contracting out of solid waste collection services in Accra, Kumasi and Tema in Ghana. There are parallels here with the water supply case presented by Tati 2005: poor performance was observed because many of the fundamental rules of P-A theory were ignored in practice by municipal governments. In the Ghana cases, the volume of solid waste collected increased (this was the basis on which the companies were paid), but so do too did the cost per ton of solid waste collected. The failure to realise efficiency savings is attributed by Awortwi 2004 above all to the fact that two of the major contracts were not competitively tendered. Instead, “politics and patronage became a factor in awarding contracts” (p218), with the Mayor of Accra also being a board member of the company awarded the monopoly contract (initially for five years). The contracts did not require companies to make new investment in equipment; instead they took over the assets of the local government departments on very favourable terms. Meanwhile, inflexible civil service regulations meant that few jobs were saved by contracting out the service and almost no resources were made available for monitoring contractual performance.

Awortwi 2004 argues that performance is unlikely to change until civil society organisations start advocating for greater accountability of service providers. (Few households surveyed in the three cities indicated that quality of service provision had increased under the PPP). However, he did note that ten years of experimentation with contracting out had led to increased capacity for service delivery amongst certain community-based organisations, which could bode well for competition and performance in the future.

One can argue that the three cities will eventually learn from these mistakes (and perhaps already have). However, the tale cautions against unrealistically optimistic expectations from PPPs based on theory alone, if implementation capacity or political will are lacking. Only if the relevant political leaderships are committed to improving service delivery and hence to ensuring that contracts work well (striving at least to get the basics right initially, then learning from subsequent experience) will private sector participation improve the delivery of services.

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<sup>8</sup> Centralised conditions may be imposed for fear that decentralised management authority will lead to favouritism, patronage and other forms of abuse (Larbi 2006), but are widely recognised to impede organisational performance (Grindle 1997).

### 6.1.3 Health Services

Palmer and Mills 2005 examine three contracts for primary health care services in South Africa and Lesotho, of which two were cases where private providers were contracted by the public sector. They acknowledge that such contracts are not yet common in practice in Africa, despite considerable discussion of the theoretical benefits of contracting out. Palmer and Mills 2005 do not compare performance outcomes across the three cases, but instead explore how contextual and institutional factors influence the nature and functioning of contracts. Their results are indicative of challenges that contracts within the agricultural sector could face.

A first problem for primary health care is that it is complex, involving a broad range of services. This makes it difficult to specify complete contracts, documenting all possible services to be rendered and the terms under which they will be rendered. This is particularly the case in rural locations where it is rare for more than one service provider to operate in a given area. By contrast, in the one urban case, other providers were available within the same locations, allowing contracts to be much more tightly specified (only certain standardised services undertaken by the providers in question)<sup>9</sup>. Not only is the actual number of service providers in rural areas low; so too is the known pool of potential providers. This means that rural contracts were managed relationally. If problems were identified, contractor and provider generally talked them over. Contract termination was considered problematic, as there may be no one else to take over the service provision role. As in many of the other cases reviewed in this report, monitoring was also problematic. Service providers were expected to send monthly reports of services rendered, but the capacity within the contracting agency to actively monitor performance by visiting rural care centres was limited (Palmer and Mills 2005).

### 6.1.4 Demand Stimulation

Table 2 distinguished service delivery contracts, where there is no expectation that a viable private market for the service in question will emerge in the foreseeable future, from public efforts to stimulate demand for private services, where the hope is that a self-sustaining private market could develop once clients/consumers become familiarised with the product or service in question. An example of the latter – the provision of insecticide-treated bednets in Tanzania – is discussed by Jones et al. 2006.

The Tanzania National Voucher System (TNVS) is part of the Tanzania Ministry of Health national insecticide treated nets programme and is funded by the Global Fund to Fight AIDS, TB and Malaria (one of the health investment funds discussed in section 7.1.2 and covered in the review by Buse and Harmer 2007). Companies manufacture and distribute bednets and insecticide treatments within Tanzania, but supply was initially restricted to urban and more accessible rural areas. Thus TNVS distribute vouchers to subsidise the purchase of bednets to women in remoter rural areas through Ministry of Health staff engaged in their regular duties. Voucher recipients are pregnant women, who receive them when they attend normal pre-natal appointments at health centres. They can then exchange the voucher for one of a range of nets available from local traders, paying a small transaction fee (seen as showing commitment to use the net). CARE & World Vision are also involved in the programme, providing public awareness campaigns and training of clinic staff.

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<sup>9</sup> Sinanovic and Kumaranayake 2006 assess four contracts for delivery of TB treatment programmes in South Africa. The specific nature of the services contracted perhaps contributes to the strong observed performance.

Jones et al. 2006 report a number of positive outcomes from the programme. 85% of vouchers distributed are redeemed for nets and use of these nets is estimated at 95%. A cost per net of c.US\$5 represents a good return against malaria cost savings. Meanwhile, the extra demand created by TNVS has stimulated both manufacture and distribution of bednets. Expanded distributor networks in rural areas - there were 1000 retailers in the study area at the start of the programme, but 3773 by 2006 – has also stimulated sales of unsubsidised nets (up 30%). This suggests that a self-sustaining private market could eventually emerge from the programme, even in less accessible rural areas.

On this final point, comparison with the fertiliser voucher (subsidy) scheme in operation in Malawi since 2005/06 is instructive. In Malawi, the vouchers are funded out of the national budget (albeit with some benefit from direct budget support) rather than from dedicated donor funds. Donors have argued that the voucher programme should be used to stimulate the expansion of private retail input stockists, but instead the government has preferred to retain control of distribution by channelling all sales of subsidised fertiliser through two parastatal organisations (at considerable time cost and inconvenience to many voucher recipients). It is suggested that this decision, which misses an important opportunity to encourage private participation in input retailing, may protect rent-seeking opportunities available to those involved in public distribution, especially given the importance to farmers of timely application of fertilisers (Future Agricultures Consortium 2009).

Two important differences between bednets and fertiliser, with implications for the emergence of self-sustaining private markets, may be noted. Firstly, bednets are a genuinely new technology to many rural Tanzanian households. These households may only need to use one bednet to realise the benefits. By contrast, Malawian farm households have had intermittent access to fertiliser for many years. The argument that self-sustaining markets can arise out of a voucher-based subsidy programme is based on the idea that greater opportunity for experimentation with fertiliser use will allow farmers to improve the efficiency of that use, thereby raising their willingness to pay for fertiliser. However, there are several reasons why this process is likely to be much slower than growth in demand for (unsubsidised) bednets. These include the facts that:

- No extra extension has been provided alongside the fertiliser subsidy programme;
- The programme only supports a couple of types of fertiliser, whereas experimentation is likely to be most profitable where farmers can try a range of types to find the one(s) that is most suited to their particular soil;
- Where farmers have only been able to access subsidised fertiliser late, the benefits of application will have been reduced by this delay;
- The presence of the subsidy itself may reduce the incentive to search for more efficient use of fertiliser;
- The cost of a bag of unsubsidised fertiliser is sufficiently high relative to the annual incomes of many smallholder households in Malawi that credit would be required (irrespective of utilisation efficiency), yet seasonal credit services are not widely available.

The second important difference to note is the potency of fertiliser vouchers as a tool of political patronage. By contrast, distribution of vouchers for bednets is not so easily transformed into political gain, especially when linked to attendance at ante-natal clinics. Whilst conceptually it is possible to separate the (political) distribution of fertiliser vouchers from the (technical) mode of fertiliser delivery, it is highly likely that the fertiliser market will

remain subject to political interference for some time to come, adding to the risks of private sector investment in fertiliser distribution.

## **6.2 Agricultural Extension Services**

Within the agricultural sector, extension advice is the most obvious “candidate” service for contracting out to the private sector. Nevertheless, despite much discussion of potential benefits, developing country examples are relatively rare in practice<sup>10</sup>. In this section we consider the attributes of agricultural extension that influence its suitability for contracting out, then discuss two prominent examples where public policy has sought to leverage private sector involvement<sup>11</sup>.

Managing an agricultural extension service for large numbers of dispersed - and especially poor or semi-literate - farmers is a challenging and complex undertaking (Anderson and Feder 2007). Two over-riding constraints discourage private investment in extension service delivery outside of supply chains characterised by strong vertical coordination between farmers and buyers (a special case which is examined later in this section). The first constraint is that, whilst extension information can be of various types, much of it has public or common pool good attributes. Thus, whilst advice on pest control for rainy season tomato production to a farmer group close to Nairobi is essentially a private good, an extension programme to tackle striga infestation of maize in a poorer district in the same country is a much more complex exercise that has to address deeper causes of soil exhaustion and to cope with major externalities across neighbouring farms. The second constraint is the “(in)appropriability” of the benefits from extension in contexts characterised by highly variable weather and/or market prices (Hanson and Just 2001). Under these conditions, farmers find it hard to predict the value of extension advice in advance, as a result of which private providers are unable to appropriate much of the value through user charges. The combination of these two constraints means that, except perhaps in the most commercialised market contexts<sup>12</sup>, willingness to pay for extension amongst small-scale producers in low-middle income countries appears low<sup>13</sup>.

Meanwhile, as highlighted in Table 3, attributes of the extension *process* pose formidable challenges for management of effective service delivery, irrespective of the delivery agent (public, private, NGO). Most importantly, the effort of front-line extension staff is difficult to monitor, given the dispersed and sometimes remote locations that they are expected to visit. Whilst number of visits and contacts may be recorded, it is hard for managers to assess the quality of those contacts. This makes it difficult for organisations to incentivise front-line staff to perform well. This difficulty is compounded by the fact that one cannot necessarily

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<sup>10</sup> Anderson and Feder 2007 quote estimates that “80% of the world’s extension services are publicly funded and delivered by civil servants” (p2345), whilst only 5% are private. The remainder are delivered by universities, autonomous public organisations and NGOs.

<sup>11</sup> Note that NGO provision of extension services may be as appropriate as private commercial provision in many African contexts and that the state could seek to contract NGOs in addition to or instead of private providers (Muyanga and Jayne 2008). However, consistent with our focus in the remainder of the paper, we concentrate primarily on private sector involvement in extension provision.

<sup>12</sup> Holloway and Ehui 2001 estimate that over a third of their sample of dairy producers around Addis Ababa could be willing to pay the costs of extension delivery. However, this remains a hypothetical calculation. Hanson and Just 2001 comment that, “With asymmetry of information [about the value of advice], determining ex post willingness to pay for extension may offer little indication of the viability of fee-for-service extension or of appropriate fees to charge” (p778).

<sup>13</sup> Anderson and Feder 2007 hypothesise that low willingness to pay is observed because many such farmers “have not seen examples of effective, responsive extension” (p2355). However, the Chile case discussed below casts some doubt on this. Arguments based on the fundamental attributes of extension seem persuasive.

attribute positive agricultural outcomes to particular extension input or, conversely, take disappointing agricultural performance as an indicator of poor extension performance (Israel 1987). Agricultural performance depends on many aspects of the wider policy environment, not to mention the weather. Extension agents may provide high quality advice, but the complementary services necessary for the uptake of new technologies (e.g. input supply, finance, output marketing) may be weak or lacking<sup>14</sup>.

Careful research design can at least partially disentangle some of these attribution issues for evaluation purposes. Advocates of extension investment thus argue that, especially where new agricultural technologies are being introduced, provision of extension services can usefully raise agricultural productivity (Anderson and Feder 2007)<sup>15</sup>. This in turn is important for poverty reduction (Irz et al. 2001; Alene and Coulibaly 2009), with many of the benefits accruing to consumers, rather than producers, although the balance varies by context (De Janvry and Sadoulet 2002). For these reasons, most states in low-middle income countries attempt to provide some sort of agricultural extension service as a merit good. However, the attribution challenges plus the fact that improving performance of extension services is likely to be a long-term undertaking, mean that investment in extension has limited attraction to politicians as a vote winner (Anderson and Feder 2007). Thus, public extension services are often under-funded and/or demoralised, contributing to a vicious circle of poor performance and low investment.

Public extension services are also often centralised and hierarchical. This is an understandable response to the challenges of running a large organisation in difficult circumstances. However, it also makes them unresponsive to the highly diverse needs of farmers of varying socio-economic status facing diverse agro-ecological and market conditions. One might thus expect proposals for extension reform to involve moves towards smaller organisational units with flatter management structures, despite the challenges that this creates for the provision of training for extension staff and for quality assurance for the multiple, smaller extension organisations. Effective reform should also give greater voice to farmers regarding the delivery of extension advice, as they are the only people who can accurately assess the quality of extension advice received (Anderson and Feder 2007).

In theory, introducing private extension service providers could meet both of these objectives, if there is a mechanism through which farmers can express their preferences across competing providers. Given that willingness to pay for extension is likely to be low, this could happen through distribution of vouchers that give farmers an entitlement to a certain amount of extension input<sup>16</sup> or alternatively through farmers' representation on the bodies that decide which companies should receive contracts to provide extension advice in a given area. Note that the latter requires some decentralisation of extension service provision, which itself brings management closer to service users and could subject them to local political pressures for good performance (Anderson and Feder 2007).

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<sup>14</sup> Hypothetically, this could also act as a deterrent to private investment in extension. However, in the case of extension, this is unlikely often to be the binding constraint.

<sup>15</sup> Note that, where technologies are new, it is particularly difficult for farmers to predict the benefits of extension advice *ex ante*. Under such conditions the appropriability of extension benefits is also lowest, reinforcing the case for public delivery and/or funding of extension effort (Hanson and Just 2001).

<sup>16</sup> Hanson and Just 2001 suggest that partial recovery of extension costs through user fees is an alternative mechanism by which farmers can "vote" for good providers.

## 6.2.1 Learning from Chile and Uganda

Two countries provide particularly useful lessons on involving private service providers in national extension systems. From unpromising origins, Chile has pioneered private extension provision for 25 years, evolving the system over time to respond to challenges and observed shortcomings (Bebbington and Sotomayor 1998; Cox and Ortega 2004). Within Africa, Uganda has engaged seriously with the issue of extension reform over a number of years. Its chosen path also creates space for private service providers to operate in competition with public and NGO advice. Both programmes, which are described in more detail in Boxes 1 and 2, have been subject to some degree of independent evaluation.

### Box 1: Agricultural Extension in Chile

According to Cox and Ortega 2004, the move towards private extension provision in Chile in 1978 came because the government of General Pinochet wished to cut public sector employment and felt there would be less political fall-out if retrenched extension staff could continue to make a living through selling their services as private extension suppliers. During the first five years of this experiment, farmers received vouchers with which they could “purchase” extension services. These were intended to cover 80% of the price of extension services in 1978, falling to 20% in 1982 and zero in 1983. However, farmers proved reluctant to pay increasing sums as the level of state support fell, which meant that providers cut down on quality. Moreover, there was inadequate monitoring of service provision by either the state or farmers’ associations. According to Bebbington and Sotomayor 1998, some farmers and providers instead colluded to share out the value of vouchers.

Since 1983, therefore, individual vouchers have been abandoned. Instead, extension providers have bid to provide services in a given geographic area based on specified work plans. Until 1990 only private service providers were permitted to bid, but since then NGOs and farmers’ organisations have been permitted to enter the market. Work plans tend to emphasise the quantity of services provided, rather than quality, given the problems of monitoring quality noted above. As a partial corrective to this, the “voice” of farmer representatives within the processes of contract allocation and monitoring has been increased over time. However, farmers’ control over these processes, including their ability to prevent collusion between corrupt service providers and local officials, is still inadequate (Cox and Ortega 2004).

According to Cox and Ortega 2004, during 1990-94 extension coverage in Chile reached a peak of 50,000 households or 20% of the small farmer population. Extension services tend to focus on medium-sized farms and have increasingly promoted agricultural commercialisation, in line with wider government policy. However, since 1987 there has also been a second stream of assistance, targeted at poorer farms (<5 hectares irrigated land equivalent), for which 100% state subsidy is provided to contracted service providers.

## Box 2: Agricultural Extension in Uganda

Reform of the national extension service is a key part of Uganda's Plan for the Modernization of Agriculture, which in turn is a central component of the nation's Poverty Eradication Action Plan. Therefore, in 2001 the extension service was renamed the National Agricultural Advisory Service (NAADS) and a programme to introduce a new approach to extension delivery was piloted in six districts. By 2005 the new NAADS approach was operating in 280 sub-counties across 29 districts (Benin et al. 2007), i.e. around a third of all sub-counties across roughly half of all districts.

The NAADS approach is facilitated by Uganda's wider programme of administrative decentralisation. Farmer groups contract service providers, including both commercial private sector and NGOs, to provide advice through short-term contracts. These can be quite specific, for example advice on the establishment of a specific new crop of enterprise. In each district a coordinator works with farmer organisations at sub-county level and with local communities to allocate contracts and to monitor performance. As NAADS is rolled out, therefore, one of the major early activities in each area is farmer group mobilisation. According to Benin et al. 2007, over 13,000 groups had been registered by NAADS by 2005.

In the new pluralistic environment, there appears to be some confusion as to the actual affiliations of some front-line staff. Thus, In their survey of around 900 households, Benin et al. 2007 found that the number of extension visits received (in 2004) by households in sub-counties just embarking on the new NAADS approach was higher than that in older NAADS sub-counties, but that this in turn was more than twice as high as in non-NAADS sub-counties. In older NAADS sub-counties 30-50% of respondents (according to information type) reported "NAADS service providers" as their main source of information, with the remainder citing NGOs not affiliated to NAADS or NGOs of unknown affiliation and a few citing government extension staff. These latter responses suggest some confusion in respondents' minds, as traditional government services no longer operate in these sub-counties. Instead, Benin et al. 2007 suggest that the "government" agents may be former government extension workers now employed by NGOs or private companies under NAADS. Claimed dependence on "NAADS service providers" was higher in new NAADS sub-counties, which may indicate that use of NAADS services declines somewhat after an initial experimentation period.

Unfortunately, within the figures cited by Benin et.al., it is not clear what proportion of "NAADS service providers" are commercial private suppliers, as opposed to NGOs. Bahiigwa et al. 2005, meanwhile, are downbeat about the impact that reforms have had on commercial private participation in extension provision. They claim that it was envisaged that the public extension service would be reorganised so as to provide technical advisory services to private sector extension providers, but that this has not happened.

Positive impacts are claimed for extension in both Chile and Uganda. However, these findings cannot be used to demonstrate the advantages of private participation in extension over alternative models. In Chile the evaluation (discussed below) compared households with and without any extension support (even though the support that was provided did come from contracted private providers), whilst in Uganda the proportion of NAADS provision that is commercial private remains unclear. Whilst both systems appear to perform tolerably well – certainly by the standards of most African countries that continue to rely entirely on delivery

of advice through state agents – this performance may owe as much to the fact that policy makers have paid sustained attention to the performance of their national extension systems as to the participation of private service providers in those systems. Nevertheless, the findings do at least show that participation of private service providers is not incompatible with reasonable standards of service provision.

A large-scale evaluation of the Chilean extension system was undertaken by RIMISP in 1998, following conflicting findings from previous assessments (see Bebbington and Sotomayor 1998 for key conclusions from some of these). According to Cox and Ortega 2004, the RIMISP assessment found that on average the programme had a positive impact on the gross margins and incomes of client households<sup>17</sup>. However, for traditional annual crops (read “staples”?) the impact was negligible and, in the case of maize, extension advice from commercial seed companies was more found to be effective in raising gross margins than the advice provided by the formal extension system. Moreover, impacts were uneven across regions (not correlated with agro-ecological zone), perhaps illustrating the weakness of decentralised monitoring systems. A final point of note was that extensionists participating in the programme do not always keep up-to-date with technological developments. Despite years of pioneering efforts, the system remains highly dependent on state funding. As a true private market for extension has yet to emerge, supporting private institutions for extension training have also not emerged.

Meanwhile, for Uganda, Benin et al. 2007 found that the quantity and (perhaps) quality<sup>18</sup> of advice services was greater in NAADS sub-counties than in their matched control group of non-NAADS sub-counties. However, adoption rates of new technologies were insufficient to generate significantly greater yield growth in NAADS sub-counties than others. Respondents cited lack of capital/credit and inaccessibility of inputs (i.e. absence of complementary services), plus lack of land, poor weather, pests and diseases for low rates of adoption of improved technologies. Furthermore, Benin et al. 2007 found that NAADS service providers were more effective at promoting the adoption of new crop varieties and yield enhancing technologies than at promoting improved soil fertility management – a finding that led them to question the sustainability of any yield improvements attributable to NAADS. Explained by nature of problems? This finding is consistent with the observation of Bahiigwa et al. 2005 that NAADS focuses primarily on commercial producers and crops. This can be explained by the wider policy goals of the Plan for the Modernisation of Agriculture (similar emphases are also found within broader agricultural policy in Chile). However, advice on new crop varieties and yield enhancing technologies is also fairly readily time-bound, with benefits relatively easily attributable to the advice received (hence well suited to a contracting approach), whereas soil fertility management is more complex and the impacts longer term. In this sense, the findings of the evaluation exercise are consistent with the predictions of theory.

The previous section discussed whether self-sustaining private markets might emerge as a result of voucher distribution for bednets and fertiliser. This was also the original intention in the case of Chilean extension reform. However, as noted in Box 1, extension vouchers were abandoned after the first five years and have not been revisited since. Indeed, Cox and Ortega 2004 report that, after 25 years of promoting private involvement in extension provision, the state in Chile still pays 80% of the cost of extension delivery. Whilst full privatisation has apparently fallen off the policy agenda, it is perhaps surprising that a fully private “top end”

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<sup>17</sup> This author has not seen the original report to check how the evaluators controlled for selection bias.

<sup>18</sup> Satisfaction with NAADS services was high, but not statistically different from satisfaction levels in non-NAADS sub-counties.

service has not emerged for better-off producers. This suggests that, if other African states embark on service contracts for extension provision, they should do so in the expectation that they will be funding these contracts for some time to come.

Another lesson for such states concerns the capacity of (potential) private extension providers. Given the pre-reform history of public extension provision in both Chile and Uganda, most of the “private” providers post-reform are agents who have come out of the public system. In extension there are no international specialist service providers ready to enter national markets to compete for contracts. Thus, reform programmes should build in an element of capacity building for commercial extension providers.

Finally, it is worth noting that the two elements necessary for farmer voice in contract allocation and monitoring – namely, functioning decentralised administrative systems and strong farmer organisations - are missing in much of eastern and southern Africa. Whilst NAADS shows that the latter can be developed as part of an extension reform programme (with sufficient donor funding!), the latter requires some prior political commitment.

### **6.2.2 Maendeleo Agricultural Technology Fund**

The Maendeleo Agricultural Technology Fund (MATF) was established in 2002, with funding from the Gatsby Charitable Foundation and the Rockefeller Foundation, and is managed from FARM-Africa’s Kenya office. The fund aims to promote dissemination of innovative, proven technologies to farming communities in East Africa (initially Kenya, Tanzania and Uganda) through the facilitation of innovative partnerships between different stakeholders in technology transfer and by identifying and promoting innovative dissemination methods. Its main tool for achieving these objectives is a system of competitive grants (i.e. a challenge fund).

The statutes of Gatsby Charitable Foundation have prevented MATF from directly contracting commercial private sector operators to run technology dissemination projects, although bidders are strongly encouraged to include private sector partners in their bids to facilitate marketing of the products arising from technology adoption. However, the innovative use of competitive grants makes MATF worthy of brief consideration in the current report.

Challenge funds are discussed in section 7.1.1 below. They are usually used to encourage private sector investment in new products or services, which are expected to become self-sustaining by the end of the challenge fund grant period. At first sight, use of such a tool for what are essentially extension projects may seem surprising given what has just been said about willingness to pay for extension. However, in this case the extension is highly specific – the promotion of a particular new technology – and what has to be sustainable is the use of the technology, rather than continued provision of technical advice. In practice, even this has proven extremely challenging (Poulton et al. 2006b). If smallholder farmers are to adopt many new technologies, they require access to a range of supporting services, including credit, efficient supply of the technology itself, perhaps some ongoing technical advice (depending on how complex the technology is or the extent to which management has to be adjusted under varying climatic and other conditions), as well as access to remunerative output markets. Finessing demand and supply for these services within a two-three year project, such that by the end of the project volumes of business are attractive to commercial

service providers, is a daunting task. Organising provision of credit has proven particularly problematic.

Nevertheless, MATF can provide valuable lessons into potential for challenge funds within smallholder agricultural development in eastern and southern Africa, as well as into the potential of a range of specific agricultural technologies. During the period 2002-2005 MATF disbursed £2.28 million in grant funding to 51 agricultural technology transfer projects, with a ceiling of £30,000 per project per year. Its so-called “advisory panel”, which selected projects for approval, worked extremely hard and in an objective manner. Working as part of a donor-funded, NGO-managed project perhaps helped to insulate them from rent-seeking or other external interference. The panel also played an active role in monitoring them, including making a pre-contract visit to check out the capabilities of the partners against the claims made in the bid. The time that they and project staff spent in the field generated impressive organisational learning, with regards to both the requirements for successful technology adoption and the capabilities necessary within a partnership for this to occur. Whilst large numbers of concept notes were received for each funding round, the fund gradually realised the need for capacity building of (potential) bidders, in the areas of application writing, (in some cases) accounting for project funds and even in education regarding the full range of pre-requisites for successful technology adoption. However, this pro-active management approach (monitoring, capacity building, networking bidders to achieve more complete partnerships), when combined with the small size of individual projects, came at a high overhead cost. Total administrative “overheads” came to 40% of funds disbursed (Poulton et al. 2006b).

### **6.2.3 Extension within African Cotton Systems**

Supply chains characterised by strong vertical coordination between farmers and buyers avoid many of the difficulties outlined at the start of this section and which have been the subject of much of the subsequent discussion. A commodity chain, such as that for cotton in a particular country, often has a clear geographical focus, which limits the amount of agro-ecological diversity facing target farmers, if not the diversity of their socio-economic status. Cotton companies may not control the macro-economic policy environment, but, in concentrated or monopoly sectors, they are able to provide the complementary services (input supply on credit, reliable access to output markets) that can assist farmers to act on recommendations received (Poulton et al. 2005; Tschirley 2009). Focusing on the production of a single commodity simplifies the job of the extension agent. The messages are of limited relevance to non-cotton producers and some may be time-sensitive (giving them characteristics of a toll good, according to Anderson and Feder 2007). Most importantly for the companies, if they can buy all or most of the seed cotton from the producers whom they have supplied with extension advice, they can capture an important share of the benefits from that extension provision. At this point, farmer willingness to pay for extension may cease to be an issue: companies can decide to provide extension advice based on expectations of their own private benefit in terms of additional seed cotton delivered to their ginneries.

According to Tschirley 2009, companies provide extension advice to smallholder producers in most concentrated and monopoly cotton systems in Sub-Saharan Africa. The leading private companies in Zimbabwe and Zambia have made significant investments in extension provision, whilst large-scale extension efforts are credited in part with the dramatic rise of West African cotton systems during 1975-85. In the highly competitive system in Tanzania, by contrast, little or no extension advice is provided by companies, as they cannot be

confident of recouping the benefits through additional seed cotton purchases at harvest time. Where extension advice is provided, farmers are not charged directly for it. However, the cost of provision is inevitably factored into the seed cotton prices that companies decide they can afford to pay. Partly as a way of lowering costs, the task of extension provision is generally assigned to the same officers who are responsible for disbursement of input credit. However, when increased competition leads to strains in loan recovery, this can lead both to field officers de-emphasising extension delivery in favour of monitoring of crop production and potentially to farmers avoiding officers, thus missing out on extension messages. Companies focus on simple technical messages – for example, correct planting methods, timings and densities. It could be argued that, with this limited scope and appropriate training, the problem of extension quality will be limited: quantity of extension contacts should be a reasonable proxy for effective extension effort.

The limited scope of extension messages provided by cotton companies means that extension provided through this channel is not a full substitute for more general extension provision. Even issues such as soil fertility management, which are important to the long-term sustainability of cotton systems, but also affect the farming system more widely, are rarely covered. A historical exception to this has been some of the cotton systems in West and Central Africa (WCA), where policy has given cotton special status as the driver of wider rural development. Cotton companies have thus received funding to support more general extension provision, including food crop production and soil fertility management. However, as financial crises and growing evidence of inefficiency in some WCA sectors are forcing reform of these sectors, this wider extension role could well be cut back.

This discussion should serve to highlight the special circumstances of supply chains characterised by strong vertical coordination between farmers and buyers. In such cases, there is little need for public support to “leverage” private investment in extension, beyond regulation to ensure that interlocking of pre-harvest and post-harvest services can be sustained<sup>19</sup>. Where competitive output marketing prevents such coordination, even within “traditional” export cash crop systems, some form of public-private partnership may be desirable to enable broader extension efforts to build on the presence of local cotton companies and the market opportunities that they provide for rural households.

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<sup>19</sup> Eweg and Owens 2004 discuss the “joint venture” agreement between the South African Sugar Association and the Department of Agriculture and Environment Affairs to co-fund and deliver extension advice to 4600 smallholder sugarcane farmers in Kwa-Zulu Natal. The two parties had a common interest to show successful development of smallholder sugar growers in post-apartheid South Africa. However, one might question why the full costs of extension provision were not borne within the industry, as in the cotton examples summarised above. One hypothesis is that development of these smallholder growers is more of a political than an economic imperative, given the dominance of the industry by large-scale producers; that it would be difficult to pay smallholder growers lower cane prices than their large-scale counterparts to reflect the higher costs of delivering extension advice to them, but that in the competitive market conditions facing South African sugar producers large-scale producers are unwilling to cross-subsidise the costs of extension provision to smallholders.

## 7. PPPS FOR NEW PRODUCTS AND SERVICES

### 7.1 *Investment Funds*<sup>20</sup>

In this section the term investment fund is used to cover challenge funds and other social investment funds that seek to encourage new product development by private sector companies, partnerships or consortia. We focus on funds that provide some form of grant to private sector players, rather than equity investors, such as CDC Group or IFC<sup>21</sup>. We distinguish two main categories of fund:

- Challenge funds, which disburse grants on the basis of a periodic, competitive bidding process;
- “Other” funds that are managed with greater flexibility or discretion, even if the manager ultimately has to seek approval from an oversight board before finally agreeing to fund a particular proposal.

This second category admittedly covers a wide range of variants. Funding of proposals could happen on a first-come-first-served basis, providing that certain basic criteria are fulfilled. However, managers may also pro-actively seek or encourage proposals from particular groups and see capacity building of potential bidders as part of their remit. In this latter area, there is also scope for some variation of approach even within the challenge fund category.

Advocates of challenge funds highlight three main advantages of the competitive bidding approach. The first relates directly to the adverse selection challenge highlighted in Table 3: particularly compared to a first-come-first-served approach, only the best proposals received in any given period are backed – not all that cross a minimum threshold. This reduces the chance that poor projects will be funded, although, as discussed below, it does not entirely deal with the problem that projects not requiring public support will be successful. The second advantage is a governance one that partially addresses concerns about capture raised in section 4: transparency of decision making is maximised where proposals are explicitly assessed against each other. The final advantage is a more philosophical one: challenge funds work on the assumption that private sector capacity and entrepreneurship that are relevant to the sector(s) concerned already exist. Open competition allows the best ideas to reveal themselves. By contrast, a more pro-active approach by fund managers begins to look like an attempt to “pick winners” – something that a few Asian “developmental states” have allegedly done well during critical periods of development, but which is generally viewed as a difficult thing to achieve, with the danger of large, wasted subsidies when done badly.

Arguments for a more flexible or discretionary management approach include the following. Firstly, a periodic, competitive bidding process can be time-consuming and may not fit the investment timetable of key private sector actors, who may not submit proposals as a result. Secondly, and relatedly, private sector capacity may be limited, such that the numbers

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<sup>20</sup> In addition to available literature and web-based material, this section has benefited from discussions with Mark Thomas (manager of DFID’s Food Retail Industry Challenge Fund). As an aside, DFID should be congratulated on the amount of evaluation material relating to its challenge funds that has been made available via the various fund websites.

<sup>21</sup> The justification for public ownership of equity investors, such as CDC Group or IFC, is that they may encourage – through demonstration effects or joint ventures – additional private investment in sectors otherwise marginalised by international capital. However, their own internal logic is also (and increasingly?) highly commercial, contributing to poverty reduction indirectly through growth more than through a specific “bottom of the pyramid” focus, so this report does not consider them within its review of PPPs.

participating in open competition are small – and hence the benefits of competitive bidding limited. In this case, a more pro-active approach to encouraging proposals, combined with an element of capacity building, may be appropriate, creating the conditions under which open competition can thrive later. If this is the case, however, additional attention has to be paid to the lines of accountability for fund managers. Strong systems for monitoring and evaluation of approved projects are vital whatever form the fund takes. However, M&E acquires an additional dimension when managers exercise discretion over investment decisions.

As far as this author is aware, most if not all investment funds designed to leverage private investment in poorly performing agricultural supply chains in low income countries have been established by donors. Below we discuss potential for African states to establish investment funds to support their local private sectors. However, we note at the outset that the governance advantage of a competitive (challenge) fund should be a compelling argument in such situations.

### 7.1.1 Challenge Funds

In recent years challenge funds have gained in popularity as a way of encouraging private investment and entrepreneurship in areas where social benefits are perceived to be high but so too are the investment risks. In the field of international development, DFID is recognised as a pioneer of the challenge fund concept<sup>22</sup>. DFID London has so far established five challenge funds - the Financial Deepening Challenge Fund (1999-2007), the Business Linkages Challenge Fund (2000-2008), the Remittances and Payments Challenge Fund (Bangladesh 2006-2009), the Africa Enterprise Challenge Fund (since 2007) and the Food Retail Industry Challenge Fund (FRICH; since 2008) – with the intention to establish further funds also announced. All five existing funds have sought (or seek) to attract “experienced” private sector investors who are required to contribute at least 50% of total project costs<sup>23</sup>. Although only FRICH has “food” in the title, all except the Bangladesh fund have supported projects directly relevant to the agricultural sector. Box 3 provides a case study of the Financial Deepening Challenge Fund (FDCF).

**Box 3: Financial Deepening Challenge Fund**

As the first of DFID’s challenge funds, FDCF was an important source of learning regarding the challenge fund concept. It was managed by a private sector firm, Enterplan – a feature that was apparently appreciated by bidding firms – but decisions on who should receive funding were made by an independent panel. Between 2000 and 2003 £15M was disbursed to 28 projects across Sub-Saharan Africa, India and Pakistan that were developing products and services such as leasing, insurance, smart cards and community banking. Proposals had to show potential for the new product or service to improve the income and opportunities of poor people, but also to be commercially viable and replicable beyond the funding period. High profile projects supported by FDCF included the roll out and adaptation of mobile banking services by Equity Building Society (now Bank) and the trialling of the M-PESA money transfer scheme by Safaricom, both in Kenya, and the introduction of a health insurance product for smallholders in Madhya Pradesh in India that was made available through a network of rural IT facilities originally established to help farmers obtain

<sup>22</sup> Challenge funds had previously been used in UK domestic policy to tackle issues such as inner city deprivation.

<sup>23</sup> Information on all these funds can be accessed through [www.frich.co.uk/html/challengefunds.html](http://www.frich.co.uk/html/challengefunds.html)

information on market prices for soybeans and other crops. All three of these projects have important indirect benefits for the functioning of agricultural supply chains.

An internal assessment of FDCF by Enterplan emphasised that they had found it necessary to move away from the “classical” challenge fund approach of simply disseminating information then waiting for bids to come in, towards a more pro-active approach of seeking promising investors, although final decisions on fund allocations were still taken by the independent panel. In their experience, the “classical” approach only generated bids from firms that had previously received funding from DFID or another donor. They also noted that the somewhat inflexible and time-consuming bidding process may have discouraged potentially high quality applicants from bidding for funds (Enterplan 2004). A subsequent review of the programme noted the danger of encouraging a subsidy mentality amongst firms, reinforcing the message about continually and pro-actively seeking new private sector partners. Firms with no prior history of donor funding were found to be the most diligent and efficient in their use of challenge funds (Irwin and Porteous 2005). Whilst FDCF has now closed, Financial Sector Deepening trusts have been established at national level in Uganda, Kenya and Tanzania. As the current author understands it, these have moved further in their pursuit of a flexible and pro-active approach to funding, away from the formal competitive tendering model.

According to Irwin and Porteous 2005, the portfolio of a challenge fund should be evaluated very much as the portfolio of a venture capital fund, with the expectation that there will be a few “stars”, a few “dogs” (none of these and the fund probably hasn’t taken enough risks!) and a majority of “average performers”. Irwin and Porteous scored a sample of FDCF’s projects for financial viability, market impact (including demonstration effect for other firms) and pro-poor impact and arrived at an average score part way between objectives likely to be “largely” achieved and “partly” achieved. This was considered a reasonable outcome. On average, pro-poor impact was scored slightly lower than the other two criteria, but it is possible that market impact will over time translate into increased pro-poor impact.

Given the assumption that private sector capacity, entrepreneurship and spirit of innovation that are relevant to the sector(s) concerned already exist, one can ask why challenge funds are needed to stimulate private sector investment. Irwin and Porteous 2005 explain the policy rationale of challenge funds (the same arguments hold for the other funds discussed in this section) in terms of their impact on the risk-return relationship of socially beneficial projects and hence the chances of those projects being prioritised in the internal competition for investment funding within firms that may otherwise target higher income or less risky markets<sup>24</sup>. New products or services targeted at poor people may offer a firm a reasonable return, especially if they can achieve large enough scale in delivery, but they also carry high risks. Public funding aims to align companies’ incentives with public poverty reduction goals by making projects with high social returns more attractive within internal processes of competition for company investment funds: “in practice the objective of a challenge fund is to provide the smallest possible financial contribution to a socially worthwhile project consistent with making it less risky and more financially sustainable to the private promoter” (Irwin and Porteous 2005, p14).

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<sup>24</sup> According to the FRICH website, “Challenge funds work by reducing the financial risk incurred in launching a new business model and can tip the investment decision to test ideas from a ‘no-go’ to a ‘go’.” (www.frich.co.uk/html/challengefunds.html)

This, however, raises an important question that is very difficult to answer: how does one decide whether or not the public contribution from the challenge (or other) fund is/was necessary for the innovation to proceed? Might the private firm have gone ahead anyway? (This is the so-called “additionality” question). Outsiders can glean at best partial information about the internal processes of competition for investment funds within firms, whilst project proposals have to make the case that the public contribution is essential if they are to stand a chance of being funded.

This problem presents itself firstly to fund managers and their panel or board who take the final decisions on investments. Moving away from the “laissez faire” approach of the “classical” challenge fund model can help here. Initial concept notes typically provide little real insight into the additionality question. However, many private sector players have limited experience in putting funding proposals together and managers have an interest in receiving the best possible proposals, so there is a case for personal interaction between bidders and managers during the period of preparation of full proposals by promising projects. Interaction during this second stage of the process can provide managers with useful insights into how the project is seen within the firm, which in turn they can feed into the decision making process if requested by the panel or board.

For external evaluators of challenge funds, especially if they only look at the evidence a few years later, the problem is still not solved, however. Based on project documents and interviews with some of the people concerned at the time, Irwin and Porteous 2005 classify FDCF projects in terms of whether they were a “catalyst” for the project (i.e. essential to it going ahead), an “accelerator” (i.e. it probably would eventually have gone ahead anyway, but later and/or more slowly) or where the public funding probably made little difference to the process and speed of innovation. Unfortunately, they do not reveal their criteria for assessment, which would have been almost unavoidably subjective. In their assessment of FDCF projects, the third category (would have gone ahead anyway) is the smallest. However, the difficulty of establishing additionality is highlighted by the case of the Equity mobile banking scheme, which Enterplan 2004 (footnote 10), citing a CGAP report, hailed as a clear case of additionality, but Irwin and Porteous 2005 (p24) place in the “would have gone ahead anyway” category.

Meanwhile, experience with the DFID challenge funds highlights the following additional practical issues that are important if a fund is to achieve its objective of leveraging private sector investment in a cost-effective manner:

Firstly, it is important to start with a clearly defined challenge and associated outcome indicators against which projects and bidding organisations can be assessed. Examples of the challenges that FRICH and FCDF set out to address are given in Box 4. The challenge should neither be so narrow and specific that innovative new ideas are excluded (undermining the philosophical argument for challenge funds!) nor so broad that the projects collectively fail to trigger any systemic change in their (sub-)sector<sup>25</sup>.

Underlying the challenge there should be a clear understanding of why a PPP agreement might leverage private investment that would otherwise not be forthcoming, especially given that successful investments are then generally expected to achieve both sustainability and replicability within fairly short periods of time. In the case of FRICH, it is now well

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<sup>25</sup> Some form of systemic change is the “big win” that all challenge funds would like to trigger [Mark Thomas, pers.comm.]

established that, in many export (and other high value) supply chains, there are significant fixed costs associated with sourcing from smallholders (for example farmer group organisation, establishment of systems for quality control, food safety and traceability) that can be sufficient to prevent successful smallholder inclusion (Boselie et al. 2003; Raynolds 2004; Poulton et al. 2005). PPP agreements appear to offer a promising way of overcoming the initial hurdles to smallholder participation, although it remains to be seen whether future investments – as standards and competition progressively rise within high value supply chains – can then be handled entirely within the context of the commercial relationships established through the PPP.

**Box 4: The “Challenges” that FRICH and FCDF Set Out to Address**

**FRICH**

FRICH will award grants to supermarkets and their suppliers, as well as to others in the food retail industry, to encourage investments at different points along their African supply chains, from the production stage through to in-store promotions in the supermarket. These projects will test new supply chain systems and initiatives that deliver development benefits to farmers and farm workers and bring more information about those farmers to their customers. Successful projects could provide business models that have a much wider applicability across Africa.

FRICH will address three main issues:

- How to enhance productivity and add value to the supply chain, whether in production, processing, storage, transport, packaging, compliance, market intelligence, financing or procurement
- How to extend the benefits of export supply chains to producers that are currently unable to meet market requirements and are insufficiently established as export growers to justify commercial investment in their operations.
- How to expand UK consumer demand for African produce in the face of concerns about food miles, environmental conservation, labour standards and food safety.

Grantees will be expected to match or exceed the value of FRICH grants with the investment of their own resources.

Source: [www.frich.co.uk](http://www.frich.co.uk)

**FDCF**

FDCF funded projects in Africa and Asia that aimed to improve access to financial products and services by low-income customers. FDCF projects involved the development and piloting of a broad range of financial products and services. Successful bidding organisations were expected to achieve the following key criteria:

- The project must improve the income and opportunities of poor people
- Bidders must be able to contribute at least 50 percent of the project costs
- The project had to involve a high degree of innovation
- The scheme must be commercially viable to continue beyond the funding period
- The scheme must be replicable

Source: [www.financialdeepening.org](http://www.financialdeepening.org)

A second practical issue concerns the size of a fund. The danger of going too large is that large sums of public money could be squandered if the management is poor. However, there are significant fixed cost elements associated with the management both of individual projects (reporting by private partners, M&E by the public agency) and of a challenge fund as a whole (initial systems set-up and marketing costs, managing calls for proposals). Thus, where either fund size or project ceiling values are low, the overhead rate (administrative costs as a share of fund size) will be high<sup>26</sup>. This overhead rate has to be set against the social benefits derived from PPP implementation.

For credibility with private sector partners, a challenge fund should ideally start not just with an initial pot of money to invest, but also a commitment that more funds will be made available as long as the fund management and systems appear to be running smoothly. Even with fairly short-term projects to fund pilot testing of new products and services, it can take a few years before real impact can be seen – and the fund will lose credibility if donors wait to see impact from the first round or two of projects before committing additional resources.

A third issue concerns the marketing of a challenge fund. As highlighted by both Enterplan 2004 and Irwin and Porteous 2005, without active and ongoing efforts to market a fund, it runs the danger of servicing a small number of private actors, whose motives for engagement could readily slip from help for innovation to rent-seeking.

This links to the final issues, which are the importance of M&E and of acting on the information it provides. M&E may not resolve the main adverse selection problem confronting challenge funds – namely, the additionality problem - but it is necessary for demonstrating the eventual impact of a fund's investment, can shed light on the types of projects and organisations that are likely to make good use of funds in future (thereby addressing the second aspect of the adverse selection challenge: avoiding projects that will under-perform) and also helps to minimise shirking (a form of moral hazard) by successful bidders<sup>27</sup>.

Where it is established that a project is not performing, it is important to be able to “pull the plug” (i.e. cancel the grant) quickly, so as 1) to maintain incentives for future bidders and 2) to protect the overall performance of the fund portfolio. For managers and their boards to be able to do this, they must be shielded by the institutional arrangements of the fund from political pressures. Being donor-funded may be a considerable benefit here. Khan 2000 argues that the ability of the South Korean state to withdraw rents from companies that were not delivering on national development priorities, so as to reallocate them to others, was central to its success in stimulating economic growth. However, few states are as autonomous from societal and political pressures as the South Korean state in that era appears to have been.

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<sup>26</sup> Irwin and Porteous 2005 judged the overhead rate of around 20% for FDCF to be reasonable. By contrast, MATF (section 6.2.2) funds much smaller projects as well as having to engage in more capacity building with (potential) bidders, which contribute(d) to its overhead rate of around 40% (Poulton et al. 2006b).

<sup>27</sup> Table 3 sees moral hazard as being a less severe challenge for investment funds than adverse selection. Expecting private sector partners to contribute at least 50% of project costs should discourage moral hazard. Thus, if (for example) pilot testing of a new product failed because the logistical systems developed by the firm were inadequate, one might first question whether the fund had backed a project from an organisation with insufficient capacity to deliver. Experience also shows, however, that some projects are not fully backed by the senior management of the bidding organisation (remember the context of internal competition for investment funds within firms), which might affect the priority given to the project by the organisation even after approval.

Hence, rents that start off supporting innovation or learning can soon be transformed into monopoly transfers to preferred insiders. This is an issue that we return to below when we consider the potential for African states (as opposed to donors) to use investment funds to leverage private sector investment in poorly functioning value chains.

### 7.1.2 Health Investment Funds

Another area where investment funds have made a large impact in recent years has been the field of international health. Moran et al. 2005 explain how a series of investment funds, backed in particular (although not exclusively) by the Bill and Melinda Gates Foundation (BMGF), had helped to transform the landscape of research into so-called “neglected” diseases (HIV/AIDS, malaria, tuberculosis and a number of diseases with lower profile still)<sup>28</sup>. The logic of these funds is very similar to that explained by Irwin and Porteous 2005. Where diseases are prevalent particularly in low income countries, the ability of most potential consumers to pay for treatment is low, yet drug development costs are large, with large risks associated with the development of any particular treatment (Will it work? Will there be side effects? Will it get regulatory approval?). Thus, whilst drug development was driven by the value of patent rights alone, diseases of the poor were neglected by major pharmaceutical companies. However, in recent years these companies have come under increasing political and civil society pressure to address diseases that are prevalent in low income countries, so have been looking for a new model of drug development that would enable them to combine both social responsibility and commercial viability<sup>29</sup>.

Recognising that they can segment markets, so as to charge cost-based prices in major low-income markets, has been an important part of the solution. However, in the view of Moran et al. 2005, the willingness of PPP investment funds to share costs and risks at later (higher cost) stages of the drug development process – for example, large-scale clinical trials – was critical for the emergence of what has been called a “no profit – no loss” model (Moran et al. 2005, p12).

The investment funds in question are not challenge funds, but pro-actively managed funds that also seek to network players working on particular problems. This fits with a move towards a “modular” approach to R&D by major pharmaceutical companies, with companies “licensing-in intellectual property (IP) from candidate-rich but cash-poor biotechs, small companies and academics, and outsourcing non-core R&D activities to contract research organisations (CROs) including some in developing countries such as India and China” (Moran et al. 2005, p9).

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<sup>28</sup> A more recent survey of research activity for neglected diseases found that the picture had evolved further. In 2007 the largest donors were the US National Institutes of Health (42% of total funding) and the Bill & Melinda Gates Foundation (18% of total funding). Around US\$ 2.5 billion was invested in R&D for new products for neglected diseases in 2007, with 90% of this coming from public (including philanthropic) sources. Almost 80% of this funding went towards HIV/AIDS, TB, and malaria. About a quarter of donor funding was routed to PPPs, such as the International AIDS Vaccine Initiative and the Medicines for Malaria Venture (Moran et al. 2009).

<sup>29</sup> There may be some parallels here with the pressure exerted by civil society to persuade supermarkets in UK and elsewhere to stock more fair-trade products. However, pressure in the pharmaceutical industry has been much stronger. Large pharmaceutical firms recognise both that low income countries represent markets of the future and that failure to respond to major diseases affecting these countries now could seriously tarnish their brand reputations. Similarly, supermarkets want to be seen to be stocking more organic, fair-trade and otherwise “ethical” products – and avoiding the worst cases of social and environmental damage – as this contributes to their brand image. However, they also often achieve high mark-ups on both organic and fair-trade products; they have certainly not been pushed towards a “no profit – no loss” model.

Other authors also discuss these health investment funds. Nwaka 2005 considers the Medicines for Malaria Venture (MMV), established in 1999, and states that it has “radically changed the antimalarial R&D landscape” (pS20). Bringing together the “different but complementary strengths of the public sector, industry, philanthropic and charitable institutions” has been important, not least in improving coordination across basic and “translational” research. Given the large sums of money involved in medical research projects, high quality fund management, including the ability to manage relationships, structure contracts and negotiate IP agreements, is critical. As with the challenge funds discussed above, Nwaka 2005 notes that some of the MMV-funded projects have failed. However, overall the portfolio has performed well.

Chataway and Smith 2006 discuss the International AIDS Vaccine Initiative (IAVI) and conclude that it “has had some success in bringing new science and technology closer to the world’s poor”. They note the portfolio approach of supporting a number of “promising candidates, which, although technologically exciting, would not be taken further by the private sector alone” (p17) and the emphasis on funding the development stages of promising technologies, rather than more upstream research. They also note the importance of networking otherwise separate initiatives working on an AIDS vaccine, as the development of such a vaccine is thought to be a particularly complex task (even more so than for TB or malaria) and the “vaccine research and design chain” has hitherto been highly fragmented. In its early years IAVI was accused of being a rather arrogant organisation, insensitive to local cultures and needs, but, according to both Chataway and Smith 2006 and Rosiello and Smith 2008, it has since invested in more genuine partnerships in many of the countries in which it works. These aim both to strengthen weak areas of the vaccine development chain within countries (implying different modes of intervention in different countries, depending on existing players, strengths and weaknesses) and investing in advocacy and vaccine preparedness (e.g. preparing communities for vaccine field trials, identifying potential local manufacturers) within countries.

A similar learning process is documented for the African Comprehensive HIV/AIDS Partnership (ACHAP), a PPP involving Merck, Government of Botswana (GoB) and BMGF. ACHAP, established in 2000, aims to reduce HIV infection rates in Botswana, improve access to care, improve access to prophylaxis and treatment, and strengthen supportive health care systems<sup>30</sup>. As well as providing some funding, Merck donate antiretroviral drugs. Initial criticisms focused on Merck’s apparent desire to achieve quick public relations gains from the venture, rather than to form genuine partnerships, but these tensions have now been at least partly addressed. The experience highlights the useful role that a “third party” BMGF could play in the process of building trust between Merck and GoB (Clark and O’Brien 2003; Ramiah and Reich 2006).

Finally, Buse and Harmer 2007 provide a more critical look at health PPPs, based on a sample of 23 initiatives “which report involving representatives from both public and private sectors on decision-making bodies” (p260). A major criticism is that these funds have distorted national health priorities in countries in which they work (in part, a reflection of their success in tackling the specific problems for which they were established), whilst imposing uncoordinated reporting requirements on national partner (as a result of their proliferation and silo-based approaches). At the global level they stand accused of undermining the position of

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<sup>30</sup> ACHAP might fit into the category of “leveraging CSR” in Table 2.

the World Health Organisation (seen as too slow and bureaucratic)<sup>31</sup>. Buse and Harmer 2007 also raise a number of criticisms about the internal governance of (many) health PPPs, including over-representation of the private sector in decision making compared with its financial contribution<sup>32</sup>, a lack of specific and measurable objectives, and poor transparency. Nevertheless, they also recognise their “impressive contributions to efforts to tackle neglected diseases” and “remarkable achievements” (p261), including – of specific relevance to this paper - mobilising funds for specific health issues and stimulating R&D.

### **7.1.3 Relevance of Investment Funds to Agriculture in East and Southern Africa**

The funds reviewed above cover a range of levels, from supply of global public goods to strengthening national supply or product development chains. Agricultural possibilities can be thought of at these different levels, too. Whatever level is considered, however, key considerations will be the existence of a market failure that a suitable investment fund could overcome and the existence of relevant private sector capacity that such a fund could harness.

At the global public goods level, there may be opportunities for PPP approaches to leverage increased investment by multinational seed companies in traits such as drought tolerance. IPR issues would have to be negotiated carefully here.

Strengthening of national seed supply systems might also be amenable to a PPP approach<sup>33</sup>, although it should be noted that legislation governing seed sectors has also been identified as a major constraint to private sector investment (Rohrbach et al. 2003).

As noted earlier, models for smallholder access to high-value export market opportunities appear to fit the investment fund approach quite nicely, albeit with as yet unanswered questions as to whether initial access gains will be sustained over time. At the retail end, large supermarket chains have the power to make a difference to smallholder livelihoods<sup>34</sup>, but there are significant fixed costs associated with farmer group organisation and establishment of systems for quality control, food safety and traceability that need to be overcome<sup>35</sup>. Within southern and eastern Africa, supermarket development is proceeding more rapidly in some countries than others (Weatherspoon and Reardon 2003; Neven and Reardon 2004; Reardon and Timmer 2005). Whilst the possibility of smallholder exclusion has been widely flagged, greater political or civil society pressure to include local smallholders in the supply base or to reduce reliance on imported products may be required before supermarket chains feel that they need the assistance that can be offered by PPPs.

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<sup>31</sup> Similar criticisms are directed at BMGF’s grant-making activities in the health sector more generally by McCoy et al. 2009.

<sup>32</sup> This becomes particularly important where PPPs get into the realm of standard setting for their products or areas.

<sup>33</sup> AGRA recently invited bids to a fund designed to support seed production and dissemination ([www.agra-alliance.org/section/work/call\\_for\\_proposals\\_for\\_seed\\_production\\_and\\_dissemination](http://www.agra-alliance.org/section/work/call_for_proposals_for_seed_production_and_dissemination))

<sup>34</sup> Their willingness to commit their own financial resources to developing models for smallholder supply chains is less clear. However, some are willing to work in partnership with NGOs and others better placed to organise farmers and to devote shelf space to the products delivered through successful ventures [Mark Thomas, pers.comm.].

<sup>35</sup> Narrod et al. 2009 draw on case studies from Kenya (green bean) and India (grape) exports to show how a number of forms of PPP can assist smallholder producer groups to overcome exactly these barriers to market access.

As has been amply demonstrated by FDCF and its successors, development of the financial sector is well suited to the investment fund approach. Poulton and Dorward 2008 propose use of national challenge funds to extend the frontier of financial service delivery deeper into rural areas and to poorer clients, with a particular emphasis on provision of seasonal credit for smallholder agriculture. Relevant private sector capacity exists amongst microfinance organisations and some commercial banks that currently service mainly urban centres and peri-urban areas, but developing products for seasonal lending amongst more dispersed clients will entail high risks and learning costs. Poulton and Dorward 2008 suggest that bids for funding should state how many new clients, of what broad socio-economic status, in which areas would be targeted over a given funding period (3-5 years) and how much subsidy would be required to achieve this<sup>36</sup>. However, there could be flexibility as to how the subsidy was used and what models were tried (e.g. microfinance, member-managed models, roll-out of new ICT technologies). This bidding for the minimum subsidy per new client should reduce the scale of the additionality problem, although the M&E requirements to guard against moral hazard would be high.

Continuing with a geographic theme, decentralised planning processes seem ideally suited to tackling the problems of agricultural supply chains in particular locations (Foster et al. 2001) and perhaps especially to securing the complementary investment required from multiple, independent players (private and public) in both input and output markets to intensify the production of important staple food crops (Poulton et al. 2005). However, decentralisation has proceeded unevenly in southern and eastern Africa, and decentralised administrations remain relatively weak and under-funded even where most progress has been made (e.g. Uganda). As a way of encouraging decentralised planning processes for agriculture, FARM-Africa et al. 2004 propose the introduction of a district agricultural development challenge fund(s), managed at either national or regional (supra-national) level, that would welcome bids arising from district-level agricultural planning processes. Criteria for acceptance would include evidence of genuine participation by both farmer representatives and the private sector within the planning process that gave rise to the proposal, as well as the merit of the proposal itself<sup>37</sup>. Given the limited funding available to both local governments and many of the relatively small players engaged in staple food supply chains at district level, the additionality issue should not be too severe. (Matching funding could also be a criterion).

This suggestion once again raises the point – encountered in the discussion of health investment funds – that investment funds should seek to support, rather than redirect, national policy priorities. There is little evidence that serious attention is yet being given to decentralised planning processes for agriculture in much of southern or eastern Africa. It also returns to the issue of who might finance such a fund: national governments or donors? State funding would be a good indicator of political commitment to the principle of decentralised planning, whereas a donor fund could “push” before the political will was really there. On the other hand, a donor-controlled fund (with independent contracted management) might be less vulnerable to political pressures than one funded out of the national budget (even in the era of direct budget support). As noted earlier, there are governance advantages inherent in the competitive bidding process of a challenge fund, as long as decision making is transparent

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<sup>36</sup> Warner et al. 2008, p28 discuss the use of similar (albeit somewhat more prescriptive) “least cost subsidy competitions” for expansion of rural telecommunications services first in Chile and now in a variety of countries in Latin America plus Ghana and Uganda.

<sup>37</sup> Effectively, this is a proposal to use challenge funds to support the development and effectiveness of local deliberative fora (see section 8).

and the decision board is indeed independent. The composition of this board may well be a good indicator of the likely success of a district agricultural development challenge fund.

## ***7.2 Loan Guarantee Funds***

This section reviews loan guarantee funds as a mechanism for encouraging commercial lending to players within agricultural value chains in cases where such players are felt to suffer from sub-optimal access to capital. Two applications are discussed: loan guarantees to facilitate trade credit to agricultural input stockists (or agro-dealers) and guarantees to commercial banks to leverage new lending to the agricultural sector. The latter application may have been inspired by the success of the first, given that first Rockefeller Foundation and now AGRA are involved in promoting both.

Loan guarantees may encourage the extension of existing loan products to new groups of borrowers and/or support the piloting of new loan products and modes of delivery appropriate for these groups. In the simplest case, the risk of lending to the new groups of borrowers is perceived differently by the lender and the third party willing to offer the guarantee. For example, the new groups of borrowers may lack traditional forms of collateral. They may also be unknown to the lender – who, therefore, finds it difficult to assess the risk of lending to them – but known to the third party, who believes them to be creditworthy – hence the third party’s willingness to offer the guarantee. In this case, the guarantee provides the lender with sufficient assurance to lend to the new groups of borrowers for an exploratory period, during which time the lender can make a more informed assessment of their creditworthiness. If, during this period, it transpires that the third party is correct and the borrowers repay all their loans, then the lender should be willing to continue to advance loans without guarantee, based on his/her own acquired knowledge of the borrowers. The best case scenario is that new lender-borrower relationships are established without any recourse to the loan guarantee fund.

Loan guarantees may also be offered where the third party has no direct knowledge of the potential new groups of borrowers. In this case, the rationale for the guarantee is as follows: The third party believes that increased lending to the new groups of borrowers would be in the public interest (for example, it would enhance the performance of strategically important agricultural value chains or permit poor groups to participate in them). It recognises that successful lending to the new groups will require *either* the piloting of new loan products or modes of delivery appropriate for these groups *and/or* a period of learning about the memberships of these new groups (beginning to differentiate the creditworthy ones from those who cannot be trusted and working out the key traits that distinguish the two). Either way, lending risks will be high during the learning phase; sufficient to discourage “uninsured” experimentation. In this case, the guarantee provides the lender with a degree of insurance against expected losses during the learning phase. The best case scenario is that, by the end of the guarantee period, the lender will have developed suitable new loan products and cost effective modes of delivery for lending to the new groups and will know enough about them to be able to differentiate the creditworthy ones from those who cannot be trusted, such that s/he is willing to continue to advance loans without guarantee. Even under this best case scenario, some recourse to the loan guarantee fund is expected.

### 7.2.1 Guarantees for Supplier Credit to Agro-dealers

This model was first pioneered by CARE as part of their so-called AGENT programme in Zimbabwe and Kenya in the 1990s (Rusike and Gandanhamo 1999) and has subsequently been promoted by projects funded first by Rockefeller Foundation and more recently by AGRA, in Kenya, Malawi, Uganda and Tanzania. In this model, access to credit is one component of a capacity building programme for agro-dealers, the other major component being training in business management skills and/or technical knowledge regarding agro-inputs<sup>38</sup>. Training programmes generally begin first. These assist the implementers of the programme to get to know individual agro-dealers. On the basis of the knowledge thus acquired, the programme then offers guarantees to input wholesalers to encourage them to provide supplier's credit to trained, competent and diligent agro-dealers. This is thus an example of the first case set out above.

World Bank 2006 reports briefly on the experience with the agro-dealer development programme in Malawi. At this time, over 300 agro-dealers had been trained. Linkages to major agricultural input supply companies in the country enabled the agro-dealers to acquire stock on 30-60 day credit and the volumes of inputs that they sold had risen impressively as a result. In three years the default rate on this suppliers' credit was below 1%. The current author understands that default rates have been similarly low within the parallel programme in Kenya, where over 200 agro-dealers were trained in the west of the country by 2007.

Some indication of the outcomes of such programmes for smallholder farmers can be gained from Ariga et al. 2006. They draw upon Kenyan rural household data collected in 1996/97, 1999/2000 and 2003/04, a period over which fertiliser use amongst smallholder farmers in Kenya was increasing. Ariga et al. 2006 show that the average distance to the nearest fertiliser retailer across the whole sample declined from 8.4km in 1997 to 4.1km in 2004. For households that did not use fertiliser in any of their three survey years, the average distance to the nearest fertiliser retailer exceeded 18km in 1997. (It had fallen to 8.2km by 2004). By contrast, for fertiliser users the average distance was just over 4km in 1997 and this also fell over the period to 2004. Much of the growth in smallholder fertiliser usage in Kenya during this period was accounted for by the growth in production of horticulture and other high value crops. However, Ariga et al. 2006 also demonstrate steady, widespread (across regions and smallholder farm categories) increases in fertiliser use on maize, despite a static or declining maize:fertiliser price ratio over the period. This suggests that access to fertiliser, i.e. the supply side of the fertiliser use equation, was an important part of the story.

Of course, the agro-dealer programme described above is only a modest component of overall developments on the supply side. It only began part way through the period reviewed by Ariga et al. 2006 and worked with *existing* agro-dealers in one part of the country (albeit one of the less well served parts). However, the potential benefits of improved access to fertiliser retailers are well illustrated<sup>39</sup>.

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<sup>38</sup> Agro-dealers may be agricultural professionals (for example, vets or extension staff) who have decided to branch into private business, but have only rudimentary understanding of basic business management. Alternatively, they may be entrepreneurs with no technical background in agriculture. This latter knowledge gap may restrict their business expansion, insofar as they cannot offer customers accurate advice on the most appropriate products for their circumstances, thereby reducing demand for their services. However, from a public policy perspective it also limits their usefulness as suppliers of public goods (technical advice) to agricultural producers.

<sup>39</sup> By contrast, the jury is still out on the additional claim that trained agro-dealers can become the focal points for a private sector extension information network that compensates for limitations in state extension systems.

More recently, private agro-dealer networks in both Malawi and Kenya have had to contend with the introductions of fertiliser subsidy schemes, a particularly large one in the Malawi case. In theory, the use of vouchers at the heart of these schemes means that the arrival of the schemes could provide a boost for private agro-dealers, if they are allowed to distribute the subsidised fertiliser and reclaim the value of the vouchers from the state. However, as noted in section 6.1.4, the Malawi government has preferred to channel all sales of subsidised fertiliser<sup>40</sup> through two parastatal organisations, thereby reducing the business available to the country's emerging private agro-dealer network (Future Agricultures Consortium 2009). Whilst access to capital and training were undoubtedly constraints on agro-dealer expansion, the nature of ongoing state intervention in input markets and fear of its implications for future business development could become the more binding constraint.

### **7.2.2 Guarantees to Commercial Banks to Support Agricultural Lending**

In 2005 Rockefeller Foundation provided a loan guarantee fund of US\$500,000 to Centenary Rural Development Bank (CERUDEB) in Uganda, on the basis of which CERUDEB lent US\$1 million to farmers over the period 2005-08. The agreement specified that the two parties would share the costs of any loan defaults equally. Over this period the drawdown on the guarantee fund to cover loan default was only US\$10,400 – less than the guarantee fund accumulated in interest (AGRA 2009). Subsequently, the agreement has been renegotiated for a further two years<sup>41</sup>. However, for this extension period the same US\$0.5 million guarantee is expected to leverage US\$4 million of lending. This change in leverage rate may be evidence that the experience of the first guarantee period had caused CERUDEB to re-assess the risk associated with careful agricultural lending. However, in the view of the current author, the value of the guarantee cover under the first deal (enough for Rockefeller to meet its obligations in full even if there was 100% default on the loan portfolio) was also high.

Both the original agreement between Rockefeller Foundation and CERUDEB and the subsequent extension have required the latter to report annually to Rockefeller on the following things (amongst others):

- The total loan portfolio supported by the guarantee and its status (arrears, defaults etc)
- Number and names of borrowers (in some cases, loans were extended to groups)
- Loan amounts
- Average farm size
- Purpose of loan (which crop, livestock)
- Branches through which the loans were lent.

The total number of farmers benefitting from the first phase of the arrangement (some of them through membership of farmer groups that received collective loans) was in excess of 2000. Rockefeller stipulated that borrowers should not be cultivating more than 10 hectares, as a way of ensuring a “small farmer” focus. The average loan size was somewhere in the range US\$500-1000. Microfinance organisations with a particular focus on the poor now record average loan sizes well below this (Johnson et al. 2004; Poulton and Dorward 2008).

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<sup>40</sup> Private agro-dealers have, however, been allowed to sell improved seed varieties that are being promoted alongside increased fertiliser use and to reclaim the value of subsidy vouchers for seed from the state.

<sup>41</sup> The author is grateful to Brinda Ganguly of Rockefeller Foundation [pers.comm. 15/07/2009] for this information and information informing the following two paragraphs. Rockefeller Foundation conducted an evaluation of the initial 2005-08 loan guarantee prior to negotiating the extension. However, the resulting report remains an internal document.

Moreover, a US\$500-1000 seasonal loan is above what most smallholder producers in Africa could safely manage. Thus, these were “better off” smallholders. CERUDEB was not required to report on whether or not these were new borrowers (to them or to the formal banking system more generally), but the assumption is that most were, as most loans were directed to previously under-served rural areas and CERUDEB had little history of lending to smallholders prior to this. The loan guarantee was intended to permit CERUDEB to charge a “below market” interest rate, as the risk spread from lending to a new client group that was perceived as risky could be reduced. However, CERUDEB was clear that this was a commercial endeavour, so interest rate reductions were modest.

Drawing on this experience, AGRA has negotiated at least three further loan guarantee deals. In 2008 a US\$5 million guarantee (with capital from IFAD) was provided to Equity Bank in Kenya, on the basis of which Equity is due to make US\$50 million of new “low interest” loans to 2.5 million farmers and 15,000 agri-businesses. In March 2009, a deal was announced with Standard Bank whereby a guarantee fund of US\$10 million (from AGRA, the Mozambique Millennium Challenge Fund and other partners) is expected to leverage US\$100 million of new lending to the agricultural sectors in Ghana, Mozambique, Tanzania and Uganda over the next three years, benefiting 750,000 farmers and small business owners<sup>42</sup>. In a third deal with National Microfinance Bank in Tanzania, a US\$1.1 million guarantee fund (from the Tanzania Financial Sector Deepening trust – see Box 3 above) is expected to leverage US\$5 million in loans to agro-dealers (AGRA 2009; AGRA et al. 2009).

These are innovative deals designed to tackle one of the major constraints facing farmers and other players in agricultural value chains in Sub-Saharan Africa. AGRA’s action in this area is thus to be welcomed. As they have only been concluded fairly recently, it is too early to say much about effectiveness or impact. However, in the view of the current author, there are important questions to be raised regarding the detailed design of the agreements (returning to the design challenges highlighted in section 4). The following discussion is intended to raise issues for AGRA and others to investigate during monitoring and evaluation of these agreements.

Most importantly, AGRA et al. 2009 emphasise the benefits of these deals in terms of reducing the interest rates that farmers and other agricultural borrowers will have to pay for credit. Thus, the Equity Bank deal has allowed Equity Bank to reduce its “overall” interest rate on relevant loans from 18% to 12% whilst the National Microfinance Bank deal has enabled it to reduce its lending rate from 28% to 15%. Similarly, the Standard Bank deal should allow it to offer interest rates of “base plus 3%-5%” (p2). AGRA’s view is that commercial bank lending to smallholder producers in Africa is impeded by an unjustifiably pessimistic view of the risk of such lending<sup>43</sup>. The loan guarantee agreements are designed to reduce the perceived risk of lending in two ways: firstly by directly providing insurance against some portion of any potential losses, and secondly by providing finance to multiple stages of the relevant value chains simultaneously. As lending to agro-dealers, traders and other value chain actors increases the efficiency of the services provided to smallholder

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<sup>42</sup> Unlike the CERUDEB agreement described above, this is a “first loss” agreement, whereby AGRA will cover all losses up to 20% of the portfolio size in the first year, 15% in the second year and 10% in the third year. Losses beyond these limits will be borne by Standard Bank. This structure clearly assumes that Standard Bank will undergo a learning process over the period of the guarantee, something that is desirable from a public perspective, but it is perhaps also recognition of Standard Bank’s limited experience in lending to smallholders and other SMEs within agricultural value chains. It could be argued that the “first loss” approach provides weaker incentives for careful lending than the loss sharing approach applied within the CERUDEB agreement.

<sup>43</sup> The author is grateful to Akin Adesina for a very helpful discussion of these issues [22/07/2009].

producers, this should also increase the probability that smallholder borrowers will be able to make profitable use of their loans and hence be able to repay them reliably.

From this perspective, the reduced interest rates secured through the application of the loan guarantees are closer to what “true” market rates should be than the rates currently charged by commercial banks. Moreover, AGRA hopes that there will be dynamic benefits from leveraging commercial bank lending to agricultural value chains: as the commercial banks gain experience of such lending, they will realise the potential of the sector and will begin to develop new products to respond to the additional opportunities that they see.

An alternative view flows from the analysis of Poulton and Dorward 2008. According to this analysis, the main constraint to lending to smallholder producers in Africa is that, at existing interest rates, lenders are unable to cover the high transaction costs and associated default risks of lending to poor, dispersed clients in rural areas where agricultural production is predominantly rainfed and where transport and other infrastructure is poor. Loan guarantees reduce the cost of lending by reducing the provision that the lender has to make for bad loans. This “dividend” can then be used in one of two ways: either the interest rate can be reduced accordingly or the lender can *expand service provision to new client groups*, i.e. those who on average are either poorer or more remote from major market centres (hence more costly to service), whilst retaining interest rates at the same level as is charged to existing customers. According to Poulton and Dorward 2008, the latter route is the way to expand lending to the majority of smallholder producers in Africa.

If this latter view is correct and the interest rates cited by AGRA et al. 2009 are insufficient to cover the costs of lending to most smallholder producers in Sub-Saharan Africa, even taking the guarantee into account, then there is a danger that few genuinely new or poor borrowers will benefit from the existence of the loan guarantee funds as currently implemented. Instead, existing agricultural clients may receive loans on improved terms or clients may be attracted from other banks to the institutions benefiting from loan guarantee funds, thereby allowing them to expand their market share but without simultaneously expanding the size of the market (which is the public policy objective). Furthermore, if the guarantees are used to reduce interest rates, rather than to support the development of radically new loan products or cost effective modes of delivery for lending to new borrower groups, most “gains” are likely to be reversed once the loan guarantee is removed. Whilst some private learning might take place during the guarantee period (see footnote 42), it is unlikely that this will extend the geographical or socio-economic “frontier” of rural lending<sup>44</sup>. In other words, in terms of Table 2, the effect of the loan guarantee fund could be more to support ongoing service provision than to stimulate the development of new products or services.

Returning to the principal-agent models discussed in section 4, note that these outcomes may still advance the objectives of the agent; hence, the willingness of banks to sign up to them.

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<sup>44</sup> There is a long-established critique of subsidised interest rates for agricultural lending (Von Pischke et al. 1983; Adams and Vogel 1986; Braverman and Guasch 1986; Yaron 1992; Yaron et al. 1998). This argues that subsidised interest rates reduce a financial institution’s ability to raise loan capital through savings, whilst at the same time artificially increasing demand for lending. This almost inevitably leads to loan rationing, with the better connected (wealthier, politically more powerful) thereby becoming the major beneficiaries. Making larger loans to known borrowers also reduces the per unit transaction costs of lending, which is vital when interest rates are low. This reinforces the bias towards the wealthy and better connected, meaning that the intended beneficiaries of “affordable” rural lending generally miss out. Whilst AGRA see the loan guarantee model as totally distinct from past policies, if the Poulton and Dorward 2008 analysis is correct, then low interest rate loans procured through loan guarantees could still have some of the same effects.

However, the principal will not have succeeded in incentivising the agent to act in accordance with long-term public policy objectives for the development of rural financial markets.

This discussion has set out two positions based on differing analyses of the current constraints to lending to African smallholders. Of course, African smallholders are not a homogeneous group, so both analyses may have some validity for different smallholder types. As loan guarantee schemes are still in their infancy, the discussion flags issues to be tracked during monitoring of the guarantee agreements. Collecting data on geographical spread of borrowers and on loan sizes (as AGRA already require contracting banks to do) is a useful first step<sup>45</sup>. However, a further step should be to require that monitoring data distinguish between existing borrowers from the bank in question, existing borrowers from other financial institutions and genuinely new clients who have been able to access a loan for the first time as a result of the loan guarantee agreement. The author understands that monitoring obligations do not currently contain this requirement [Fred Muhukku, pers.comm.]. If this information reveals limited outreach to genuinely new or poor clients, then the emphasis on low interest rates should be reconsidered and instead emphasis be placed within the guarantee agreements directly on reaching new clients.

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<sup>45</sup> As in the CERUDEB case, information on the geographic spread of borrowers may provide some indication as to how close to the rural financial “frontier” the borrowers are (Johnson et al. 2004). However, it is not a full substitute for information on previous borrowing history.

## 8. DELIBERATIVE FORA

As noted in section 3, deliberative fora are somewhat different in nature from the other mechanisms reviewed in this paper. They fall within the general definitions of PPPs provided in footnote 1, but their emphasis is on dialogue, trust-building and coordination, rather than contractual relationships.

Hall and Soskice 2001 (p10-11) explain the importance of institutions to facilitate "collaboration and strategic interaction" within OECD economies (and sectors) where investments in specific assets are important. For such purposes institutions are required that:

- assist exchange of information
- monitor behaviour
- sanction defection
- facilitate "deliberation".

They emphasise that deliberation, i.e. the chance to get together and discuss (generally discussing specific issues of common interest, through both formal sessions and informal conversations) can build mutual understanding of the roles of different actors in a sector or in tackling a particular problem and of the long-run development vision of a sector (or economy). The trust that comes from this mutual understanding makes collaboration easier. Deliberation is thus a complement to information sharing, monitoring and enforcement of agreements (not a substitute). However, Hall and Soskice 2001 also caution that the "common knowledge" underpinning strategic interaction is difficult to create.

Hall and Soskice 2001 make particular observations where coordinated actions by both state and private actors are required. They argue that, if the state is too strong, "firms are reluctant to share ... information with governments whose position as powerful actors under a range of unpredictable influences raises the risks that they will defect from any agreement and use the information they have acquired against the firm" (p47). The "coordinated market economies" of northern Europe manage to overcome this problem, however, because powerful employer associations and trade unions exert influence within political parties, so they can "sanction" governments that abuse their power.

Turning to agricultural value chains in Africa, Poulton et al. 2006a highlight the need for complementary investments (by both private and public actors) to strengthen such chains. The challenge is particularly great within food crop marketing systems, as the incentives rarely exist for a single private investor to provide multiple complementary services to smallholder producers as part of a contract farming arrangement. Where the return on investment by one player is dependent on the existence of a complementary investment(s) by another player(s), the situation is analogous to that of asset specific investment as analysed by Williamson 1985, with the same basic problem of hold-up. As the option of merger (in this case, "horizontal integration") is rarely feasible, mechanisms for coordinating investments are required if significant private investment is to be forthcoming.

Some public role is likely to be necessary to facilitate such coordination. However, actual examples quickly highlight the low starting level of trust between private sector and state<sup>46</sup> that coordination has to contend with in most of Africa. There is little mutual understanding

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<sup>46</sup> One could make the same observation about trust between private sector and farmers and between farmers and state!

or "common knowledge". This could be an argument for the creation of more deliberative fora. However, there are also few mechanisms by which most private sector actors (and especially indigenous small or medium sized enterprises) can sanction the state if it acts in a way that is damaging to their interests. Thus, deliberative fora alone may be insufficient to encourage greater private sector investment, especially in politically high profile value chains where politicians and public agencies are more inclined to intervene.

Chitundu et al. 2006 report on the first phase of activity of a stakeholder taskforce that convened to analyse constraints to the production and marketing of cassava in Zambia. Private sector stakeholders were encouraged to take a leading role in collaborative analysis of the cassava value chain, "to ensure that analysis of opportunities and constraints gets translated into actions that will facilitate commercial growth" (p.vi). Through the value chain analysis, modest interventions were identified that could nevertheless have a useful impact on the total quantity of cassava consumed and thereby produced within the country. Working individually or collectively, stakeholders (both private and public) then undertook the interventions. These included the development and testing of new livestock feed formulations that incorporated cassava and the drawing up of grading standards to govern formal trade in cassava.

Chitundu et al. 2006 obviously feel that initial experience of the task force was a success, but caution that such success is only likely to be observed where there is a "sizeable and broad-based commercial opportunity" (p19). The possibility of win-win gains for farmers, firms and consumers increases the chances of getting commercial actors, NGOs and relevant state agencies to participate in the deliberative process. One might also note the limited scope of the interventions that the task force contemplated. Trading standards are a clear example of a public good, so we should not be surprised that collective action was required to develop these. However, were the private sector stronger, one might expect an individual firm to explore new livestock feed formulations (given their cost saving benefits) without the stimulus of the task force<sup>47</sup>. Chitundu et al. 2006 discuss the fact that the task force decided not to have its own dedicated budget<sup>48</sup> (participation and resulting interventions had to be funded by individual members) and see both pros and cons of this. We cannot draw any conclusions about the ability of a task force approach to facilitate complementary investments (of the sort discussed above, i.e. where hold-up is a serious problem) from the experience that Chitundu et al. 2006 report. It is also worth noting that cassava is a less "political" crop than maize in Zambia.

On the other hand, the achievements of the task force should be seen in context. Chitundu et al. 2006 note that the "level of public-private interaction [that the task force represented] does not come naturally in an economy such as Zambia which finds itself in a transition from reliance on public sector management towards a liberalized yet regulated market economy. Mutual mistrust between the public and private sector are [sic] common." (p19). The opportunity to bring "interested players together around a table in search of very concrete solutions to identified opportunities" was positive.

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<sup>47</sup> Chitundu et al. 2006 reflect that, as the first round of interventions took effect, new constraints to consumption and production of cassava in Zambia would become binding. The task force could address these with a second round of diagnosis, prioritisation and intervention. The question then arises: at what stage would the individual private sector actors be strong and confident enough to identify and address constraints individually (in the pursuit purely of private profit), rather than taking encouragement from working within the task force process?

<sup>48</sup> One of the first actions of the task force was to draw up a set of principles that it would abide by. This is a good example of seeking mutual understanding.

Similar multi-stakeholder deliberative processes, initiated by donor-funded projects in several African countries, have led to the development of warehouse receipt systems, designed (inter alia) to increase traders' access to capital for commodity purchase and also to promote private sector storage activity. Coulter and Onumah 2002 briefly describe the deliberative process for the development of a warehouse receipt system in Zambia, bringing together farmers, bankers, traders, millers and government policy makers. In the coffee and cotton sectors of Tanzania the presence of inspection companies at processing plants, with oversight of the receipting process, made it possible for bank finance to be provided against stocks of unprocessed raw materials to depositors, mainly primary-level rural cooperative societies. This in turn increased their competitiveness as buyers, enabling them to offer higher prices to producers. However, warehouse receipt systems have had a less durable impact on maize trading, where lack of private investment in storage has been one of the factors contributing to increased price volatility post-liberalisation. Drawing on experience in Ghana during the 1990s, Coulter and Onumah 2002 observe that ad hoc government interventions in maize markets (for example, discretionary exemptions from import duty for favoured companies) can depress prices, causing losses to those traders who have invested in storage. This undermines the incentive to invest, even where inventory credit is available to assist this. Similar difficulties have befallen the Zambian scheme that Coulter and Onumah 2002 describe [Gideon Onumah, pers.comm.]. Following Hall and Soskice 2001, deliberation alone is insufficient to ensure sustained strategic interaction where private parties are powerless to influence (damaging) state actions. Following Jayne et al. 2002, this is another case where the unpredictable and uncontrollable nature of state intervention - and fear of its implications for future business development - is more of a binding constraint on private investment than failures in financial or other markets.

## 9. CONCLUSIONS

Returning to the first question that was posed at the outset of this report, the evidence base regarding the effectiveness of PPP-type mechanisms in leveraging private investment in poorly functioning agricultural value chains and the impact of such interventions on smallholder producers is still limited. This report has reviewed a variety of such mechanisms, but many of these are “pioneering” examples. In other words, the number of cases to observe is still low. Moreover, many are still sufficiently recent that one cannot expect impact evaluations to have been conducted. On the other hand, initial evidence on effectiveness (in leveraging private investment) should be available, but can be quite hard to come by. On the premise that such mechanisms do exhibit promise to improve the functioning of agricultural value chains in Africa, there needs to be both increased investment in PPP arrangements to increase the number of cases from which judgements can be made and increased documentation of the effectiveness of those arrangements that do exist.

Insofar as evidence does exist, do such mechanisms remove or alleviate binding constraints to private investment? In some cases, the answer to this question does appear to be “yes”. In the service delivery cases discussed in section 6, private service delivery will only take place where it is contracted. More persuasively, reviews of the challenge funds (section 7.1.1) have tended to conclude that they have encouraged (or hastened) investment with high social returns, although the additionality question is hard to answer definitively. Loan guarantees to agro-dealers (section 7.2.1) have enabled them to expand the volume of their operations. Little information is yet available to show whether or not loan guarantees to commercial banks have resulted in significant new lending to agriculture.

On the other hand, whilst PPPs aim to correct for identified market failures that discourage private investment, there are also cases where explanations for low private investment should perhaps be sought elsewhere. An important alternative constraint affecting private investment in some input and staple food (especially maize) markets in Africa is the unpredictable and uncontrollable nature of state intervention. Section 8 briefly reviewed the potential for deliberative fora to build trust between public and private sector actors. This is clearly important in many African contexts, but on its own is unlikely to be sufficient to encourage greater private investment in sectors that have a history of state intervention, as long as there are no mechanisms to sanction state agencies that continue to intervene in an unpredictable and damaging manner. In this regard, it is important to note that, whilst export value chains tend to feature a number of large-scale (sometimes multinational) enterprises that can lobby governments and also have the bargaining power that comes from their generation of foreign exchange, many enterprises within domestic food markets (especially those providing services directly to producers) are indigenous small and medium sized enterprises that are particularly vulnerable to predatory state policies.

Can contractual arrangements between *public* and private sector actors effectively incentivise the latter to provide supply chain services in ways that meet public policy objectives? The answer to this question is a cautious “yes”. Several observations are in order.

The first is the importance of detailed mechanism design (see section 4). As well as correctly identifying the binding constraint to private investment, public designers of contractual arrangements need to ensure that they only provide the intended incentives to private agents (avoiding problems of adverse selection and moral hazard). For example, in this report we

have questioned the incentives provided to commercial banks when loan guarantee agreements place undue emphasis on interest rate reductions rather than expansion of service delivery. Contracting for private extension delivery has to tackle the moral hazard problems that can result from the fact that quality of extension inputs is not observable directly by anyone but the direct recipient of the service. Challenge funds have to devise mechanisms to prevent themselves against adverse selection problems.

A big challenge occurs because, unlike in basic principal-agent theory, the public contracting principal may have only limited information regarding the utility function (let alone the activities) of the private sector agent. This gives (larger) private parties some bargaining power when contracts are drawn up. One obvious response to this is for public actors to seek advice from people with requisite private sector experience when negotiating such contracts. However, it seems inevitable that there will also be a learning curve as successive contracts are drawn up. (This is one of the reasons why more cases are required before firm conclusions can be reached on the efficacy of PPP arrangements). The renegotiation of the loan guarantee agreement between Rockefeller Foundation and CERUDEB (section 7.2.2) suggests that such learning may take place on both sides.

This report also highlights the importance of thinking hard about monitoring requirements when designing contracts and draws attention to the issue of exit strategies for the public partner. What changes need to occur before private market activity is profitable without public support? Will the incentives provided by the contract be sufficient to bring those changes about? If so, what time period is likely to be required? If not, what other actions need to be taken?

The notion of a learning curve suggests that the “cost effectiveness” of PPP arrangements (from a public perspective) should also improve over time. This is an area on which very little information is yet available. Exactly what cost effectiveness means will depend on the type of mechanism. It is perhaps most straightforward in PPP contracts for infrastructure investment or service delivery where a straight cost comparison can be done with “conventional” options (a fully publicly-funded contract in the case of infrastructure investment or direct state provision in the case of service delivery). There is an inconclusive literature on cost-effectiveness in the case of PPP contracts for infrastructure investment (Hodge and Greve 2007). For challenge funds the “without fund” scenario is no new products; hence ultimately the cost-benefit analysis should consider cost of the public investment (including fund administration) vs the social and economic impacts of the new products and services. This is very difficult to do. Instead, existing assessments focus entirely on the administrative costs of a challenge fund (as a share of funds invested) and how this compares with figures reported for venture capital funds. The discussion of this by Irwin and Porteous 2005 illustrates that even this is not a precise science!

Finally, whilst contractual arrangements between *public* and private sector actors may effectively incentivise the latter to provide supply chain services in ways that meet public policy objectives, it is as yet unclear how effectively contractual arrangements between *state* and private sector actors in many African countries are likely to do this. Many of the contracts for infrastructure investment (section 5) and ongoing service delivery (section 6) have been administered by state agencies, as they were previously undertaking similar duties directly themselves. Available literature – primarily from non-agricultural sectors, although Hubbard 2003 makes the same observation based on a limited number of agricultural cases –

emphasises the low level of capacity within state agencies for effective contracting, sometimes combined with private rent-seeking activity by those responsible.

By contrast, the mechanisms reviewed in sections 7-8 were all donor-driven and funded. Donors are more likely than African state agencies to be able to pay salaries sufficient to attract people with the necessary capacity and experience to design effective mechanisms. As in the case of DFID challenge funds, they may also be willing and able to contract out the management function to private sector operators, something that can enhance the credibility of the mechanism with the private sector agents that it is seeking to engage. Finally, donors may be more willing to put in place the types of governance mechanisms that ensure transparency of decision making and inspire private sector trust.

Thus, PPPs do not overcome state failure: even where market failures are the presenting problem, state capacity to design and administer effective PPP mechanisms may remain a constraint to private investment. However, another angle on this is that there are actually rather few examples of PPP-type arrangements with clear local ownership within this report. The more critical literature on PPPs in developing countries (often reflecting on non-agricultural sectors) observes that such arrangements were “forced” on reluctant states by donors, sometimes when it was clear that fuller privatisation was not a politically feasible option. If local ownership was stronger, might the outcomes be better? One snippet of evidence on this comes from section 6.2.1: the reforms in the national extension services in Chile and Uganda exhibit a reasonable degree of national ownership and, although the evidence is not overwhelming, both systems now appear to perform better than most comparable state-only systems. There may well be an important advocacy role for AGRA, amongst others, in persuading African states to experiment with PPP-type arrangements for poorly functioning agricultural value chains.

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